VOL. XII No. 9 CHICAGO, AUGUST 29, 1907 PER YEAR $2

MOTOR AGE

PEKIN-PARIS RACE A STRENUOUS AFFAIR

PASSING OUT OF A STOCKADE

PARIS, Aug. 18—Although it has been stated that all who finish the Pekin-Paris race will be considered winners, it is Prince Scipion Borghese, who drove his 24-40-horsepower Itala into the French metropolis August 10, who is reaping the honors usually bestowed on the winner of any great event. Everywhere the prince goes he is given an ovation and hailed as a motoring hero. Banquets have been so numerous that the prince is wearying of all such functions and is anxiously awaiting a chance to slip back to Italy, there to rest from his arduous task.

The prince is popular and modest. Tall —he must be over 6 feet—and smooth-shaven, always well dressed and polished, it is no wonder the French go crazy over him. There is no trade taint in his trip, the prince being a thorough sportsman and entering the affair of his own volition. The scheme of driving a motor car from Pekin to Paris was first sprung by the Matin, a Paris publication, which challenged the motoring world to pull of the stunt, offering to promote the event. The prince was hit with the idea and without any flourish he entered the list, which at first was a comparatively long one. When the promoters insisted on each entrant posting $400 as a guaranty that he would start the list dwindled so that when the motoring cavalcade left Pekin June 10 there were only five in line—the prince's Itala, two de Dions, a Spyker and a Contal tri-car. In a way it was a race and then again it wasn't. The first part of the journey being through a comparatively unknown land, the competitors agreed to stick together until Lake Baikal was passed, then it was an open break for Paris. It was well that this agreement was made, for the motorists found it was no easy task they had encountered and hardships without number were encountered by the daring motorists.

The journey was started June 10 and on August 10, 62 days later, the Itala came into Paris alone. The exact mileage is not known, for the prince did not carry an odometer, each contestant traveling as light as possible and only taking what was absolutely necessary. They concluded an odometer was a luxury, so the prince did not fit one. However, it is estimated that the total mileage exceeds 7,000 miles. The trip was not as expensive as one might think, the prince estimating that it cost him in the neighborhood of $5,000 to make the journey. His tire bill was light, only sixteen casings and as many inner tubes being used for a journey which undoubtedly was the most strenuous ever undertaken by a motorist.

In making his plans for the trip the prince selected an Itala, first because he

PRINCE SCIPION BORGHESE

TYPICAL VILLAGE ON THE ROUTE

is an Italian and second because he had had three Itala cars. He altered it some to fit the conditions, ordering larger wheels so that he might have greater clearance. The car itself was of the roadster type, with two bucket seats in front and a chauffeur's seat behind. Figuring that his supply depots would be at least 1,000 kilometers, or 625 miles, apart, the prince fitted a gasoline tank with a capacity of more than 60 gallons, the fuel being stored in two large tanks, one on each side of the frame and behind the front seats. It was between these tanks and in front of the tool box that the third seat was placed. Also there were a tank holding 20 gallons of lubricating oil and a spare water reservoir, but the latter was thrown away to save weight after the desert of Gobi had been passed. Everything on the car was Italian save a Simms-Bosch magneto. Pirelli & Co. furnished the tires. Accompanying the prince were his friend, Luigi Barzoni, and the mechanic, Ettore Curzzardi.

In making his plans for the trip the prince did not rely on the promoters, but had his brother, who is the Italian charge d'affaires in Pekin, arrange for the supplies in the celestial kingdom, while St. Petersburg friends looked after the ar-

DEMONSTRATIONS IN ONE OF THE FRENCH CITIES

ARRIVAL OF THE ITALA IN PARIS

rangements in Russia and Siberia. In the way of breakages on the trip, the prince states that he broke both rear springs and changed a front one at Moscow, not wishing to take any chances. He had one rear wheel collapse and changed another because it looked weak. Every night on the trip the Itala tourists worked a couple of hours on the engine, with the result that no trouble was experienced with the motor outside of two or three bearings being taken up. The telegraph poles were followed and a compass never was used.

The itinerary of the trip is an interesting one. On June 11 Cha-Tua-Shung was reached. The next day Simpamwan was the stop, then Shin-wa-fa on the 13th, and Kalgan on the 16th. The next night they stopped 50 miles from Kalgan and at Pong-Kiong, on the 18th, the first 300 miles had been completed. Udde on the 19th and Tuerin, 650 miles out, on the 20th were next negotiated. On June 21-23 the travelers were at Urga and on the 24th in the Daturdaba mountains. They were at Kiatkha on the 25th and at Verkhnoudinsk on the 26th. From the 27th to the 30th they were at Misovsk, 1,260 miles having been covered. Tankoe, July 1; Irkutsk on the 2d, Zima on the 3d, Nijniudinsk, 1,770 miles, on the 4th; Kansk, 2,000 miles, on the 5th and 6th; Krasnoriarsk on the 7th; Atchinsk, 2,200 miles, on the 8th; Mariinsk on the 9th; Turuntayeva on the 10th; Tomsk, 2,500 miles, on the 11th; Kolivan on the 12th; Kainsk on the 13th; Omsk, 3,000 miles, on the 14th and 16th; Ishim on the 17th; Tumen on the 18th; Ekaterinburg on the 19th; Perm on the 20th; a village near

TYPES OF NATIVES IN CHINA

Perm on the 21st; Melet on the 22d; Kazan on the 23d; 60 miles from Kazan on the 24th; Nijni Novgorod on the 25th; Vladimer, 5,600 miles, on the 26th; Moscow, 27th to 30th; St. Petersburg, August 1, near Dvinsk on the 2d; Kovno on the 3d; Stargard on the 4th; Berlin on the 5th and 6th; Bielefeld on the 7th; Liege on the 8th; Meaux on the 9th, and Paris on the 10th completed the itinerary.

The story of the trip has been told piecemeal, but doubtless it will be brought out in book form and make an interesting narrative, especially as a representative of the London Daily Telegraph was on the trip. As sketched out by the prince, the first difficulty was experienced 3 days out of Pekin, when the Itala ran into a morass, going to the axles and only being saved through the fact that it was held up by immense roots of trees. Two days later the car got into the same difficulty after it had been dragged through 18 miles of deep sand by coolies and mules. The tri-car quit at Pong-Kiong and its driver, Pons, returned to Nankow by camel, from which point he got a train to Pekin. In making this trip he suffered greatly in the Gobi desert. It was at Pong-Kiong that the motorists sent a telegraph message, the first that had gone out of that office in 6 years. It is the only telegraph office within a radius of 100 miles, it is stated.

Going through the Gobi desert the Spyker ran shy of gasoline and it was necessary for it to lay up until a fresh supply could be secured from Udde. For the third time the Itala was morassed at Urga and then it was no light job getting

ENTERING A TYPICAL SIBERIAN VILLAGE

BEFORE THE PRINCE LEFT HIS COMPANIONS

the car on terra firma once more. Mongolians and oxen extricated it, however, but the next day more trouble of this sort was encountered and the car was slowly sinking out of sight when it was rescued. That night the tourists camped in the Daturdaba mountains. Then on the 24th the Iro river was encountered and it was a fearful job getting through. Oxen were employed for the task and it was necessary to remove those parts which might be damaged by water. A sandstorm was encountered the next day, which was accompanied by such a tornado that the Itala almost was capsized. In crossing a river on the 26th it was again necessary to drag the car through, the river being so deep the machine was under water most of the way across. However, no damage was done. The Itala created consternation among the natives between Misovsk and Irkutsk and the villagers thought it was a winged locomotive.

Prince Borghese and his companions had a close call on the 30th. They were on a bridge that broke down under the weight of the car and precipitated the machine and its occupants into the water. The current was swift and it took 3 hours' hard work on the part of the Siberians employed on the job to save the car. The next day the prin e was driving the car along the railroad tracks, when a train came along. It was by quick work only that the motorists were able to get the machine out of the way, as the wheels stuck in the sand. Then the prince thought it hardly sportsmanlike to follow the rails this way and took to the road. More adventures were encountered crossing the Birinsa and Kan rivers, it being necessary to ferry over in boats which, however, was much easier than pulling the car through the water. Torrential rains were encountered on July 6 and for 143 miles the car traveled through the rain.

WINDMILL, ONE OF THE LANDMARKS

Crossing the Tom river the motorists discovered a new method of propulsion. They used a ferry, the motive power for which was furnished by four horses trotting in a circle on the deck, much the same way as a house-mover works. Having escaped floods, morasses, railroad wrecks and countless other mishaps, the Itala next was threatened by fire. Near Omsk its brake seized and the overheating set fire to the lubricant. This communicated to the bodywork of the car and before the flames could be subdued it was necessary to use axes and chop the body. Near Abatskaia the fire fiend again attacked the car, a grass fire making the prince and his companions uncomfortable for some little time.

Siberia was left behind on July 18 and on the morning of the 20th the prince got a glimpse of Europe from the west side of the Ural mountains. On August 3 the car passed out of the domain of the czar after having been in it 41 days. The prince entered Germany at Wierzbolor. From there it was comparatively easy traveling to the end of the trip.

HAWAIIANS TAKE PART IN RELIABILITY RUN

LINEUP OF THE CONTESTING MACHINES IN RELIABILITY RUN OF THE HAWAIIAN AUTOMOBILE CLUB

HONOLULU, T. H., July 19—Although miles and miles of ocean separate the Hawaiian Islands from the United States the Hawaiians are not so very far behind the times, particularly when it pertains to motoring, which has taken a firm hold here. But Hawaiians are just getting on to the sporting angle of the game. They have had all sorts of floral parades, in which the motor car has been the center figure, but it was not until the 13th that any attempt was made to promote a reliability test. It was a small affair, admittedly, but the Honoluluans showed the greatest enthusiasm and the affair was a success, twelve cars entering, ten starting and four going through with perfect scores. The run was a 64-mile one, 32 miles each way, to Haleiwa and return. Most of the trouble came on the run out, the official results of the contest being as follows:

Car and entrant	Score
Packard roadster, Dr. Brinckerhoff	Perfect
Winton touring car, J. D. Kennedy	Perfect
Ford runabout, Bruce Kennedy	Perfect
Orient buckboard, W. N. Patton	Perfect
Maxwell touring car, S. R. Jordan	3 points
Reo touring car, H. H. Williams	8 points
Reo touring car, F. J. Warren	12 points
Reo touring car, Dr. G. R. Herbert	30 points
Ford runabout, G. P. Cooke	Disqualified
Maxwell runabout, Dr. H. Murray	No finish

Warren's Reo was put out of the contest in a peculiar manner, a stone flying up and breaking a pet cock, letting out the gasoline supply. The troubles of the other were mere trifles and only one accident marred the run. Dr. Murray, in the Maxwell runabout, hit a Jap almost at the end of the run. The Jap was riding a bicycle and refused to yield the road. He came straight at the car and his bicycle was too light to act as a ram, so the Jap got the worst of it, being thrown from his wheel, which was badly smashed. A few injuries on the head gave the Jap something to think of and the accident kept the doctor from finishing the run.

ORIENT BUCKBOARD IN HAWAII

Everyone enjoyed himself at Haleiwa, the turning point. The hotel was turned over to the motorists and in the hour and a half wait Manager Bidgood acted as host. Some of the contestants had a swim and the intermission formed a most pleasant break in the monotony of the run.

The Orient buckboard was the oldest car in the contest. It was driven by W. N. Patton, who represents the Orient in this section, and has been driven every day for 12 months. It was not passed by any of the cars either way.

The Honoluluans are much encouraged over the success of the contest and the Hawaiian Automobile Club, which promoted it, intends to follow it up with others. The local motorists watch with considerable interest the reports of reliability runs, economy tests and hill-climbs in Chicago and like the manner in which these events are conducted. The club has written for rules used by the Chicagoans, and it is thought that whatever contests are promoted in the future will be along the lines of the affairs run by the Chicago Motor Club during the summer.

CHICAGO-NEW YORK RECORD BROKEN

MEN WHO DROVE THE FRANKLIN

FINISH OF THE DRIVE AT NEW YORK

NEW YORK, Aug. 22—The Franklin has given the Chicago to New York record a bad beating and incidentally performed the oft-tried feat of making the run between the two cities in less than 2 days. The Franklin runabout, which started from Chicago yesterday morning at 4 o'clock, New York time, reached Weehawken tonight at 7 minutes before 8 o'clock. It had covered the distance, 1,060 miles, in 39 hours 53 minutes. This cut the former record 17 hours 5 minutes.

The Franklin has a fashion of outdoing itself. Last year it cut in half its own transcontinental record. This time it was the record score of 56 hours 58 minutes, made by L. L. Whitman and C. S. Carris in the six-cylinder Franklin, which a week or so before had slaughtered the record from the Pacific to the Atlantic, that went by the board. In the course of the run just ended the air-cooled Franklin incidentally put up a new record of 19 hours 3 minutes between Buffalo and this city. It is to be noted also in exemplification of the speed attained and maintained that in 24 hours after leaving Chicago the Franklin was well beyond Buffalo on its way to Syracuse. The usual route was followed to Syracuse, whence a detour was made through the Catskill mountains via Delhi.

James Daly, Melvin Bates, Charles Talbot and Clayton Carris alternated at the steering wheel, picking up at relay points competent guides who knew the road thoroughly between that point and the next relay point. Leaving Syracuse they drove the car to Chicago, arriving there at 2 o'clock in the afternoon of August 20. At 3 o'clock in the morning of August 21 with Daly at the wheel and E. D. Endicott, a Franklin owner, of Chicago, acting as guide, they started on the journey to New York city. At Elkhart Daly was relieved by Melvin Bates and with E. C. Briggs acting as guide Bates drove the car as far as South Bend, arriving there at 6:40 in the morning, where James Bowersox, Jr., relieved Briggs and acted as guide as far as Bowling Green, arriving there at 1:25. Charles Talbot then took his turn at the wheel and drove from there to Cleveland, arriving there at 5:40 in the afternoon, 8 hours 20 minutes ahead of all previous records. Carris relieved Talbot at Cleveland and with J. B. Sperry acting as guide whirled the car along in its trip to Erie, arriving there at 9:20 in the evening, where he was relieved by Daly, with J. Smith acting as pilot.

Bates caught the Chicago, Boston and New York express at Toledo, and at Cleveland Talbot made the same train, Carris joining them at Erie. When they arrived in Buffalo they found Daly in the Franklin awaiting them at the station. He had been delayed there 1 hour waiting for Bates, who was to relieve him and drive the car from Buffalo to Syracuse. Between Buffalo and Syracuse the gasoline supply became exhausted and for 15 miles the car was run on kerosene taken from the supply provided for the side lamps. Notwithstanding this delay Bates arrived at Syracuse at 8 o'clock in the morning, where Talbot relieved him at the wheel on the trip from there to Newburgh. This was possibly the hardest part of the trip, as they had to cross three different mountain ranges. At Newburgh, which point was reached at 5:35 Thursday morning, Talbot was relieved at the wheel by Carris, but remained in the car. George Mason, a Franklin agent at Newburgh, acted as guide from there to New York city.

A delegation of Franklin enthusiasts met the record-breakers at Forty-second street, Weehawken, upon their arrival at 7:35 in the evening. The new record-holding Franklin is a four-cylinder 28-horsepower 1908 model, being the first car of this model to arrive in New York city. The only mishap on the trip was one punctured tire which was caused by a nail. The car was equipped with Diamond tires.

MOTORDROME CLUB PLANS

New York, Aug. 26—The organization of the Morris Park Motordrome Club into a track racing association of magnitude is progressing rapidly. Announcement is made of the following list of officers: J. G. Robbin, president of the Riverside bank and of the Fidelity Development Co., which owns Morris Park, president; Walter C. Allen, of the Dietrich Import Co., secretary; Alfred Reeves, general manager of the A. M. C. M. A., chairman of race committee; A. B. Tucker, secretary of the New York Automobile Club, racing secretary, and Alfred Camacho, track superintendent. The club has announced the program for its race meet, which is to be held on September 6-7 at Morris Park. This includes a 24-hour relay race, which will be started at 8 p. m. Friday; a 50-mile race for stripped touring cars or runabouts; the national flexibility trials for the Winthrop E. Scarritt cup, which will consist of a mile at top speed, followed by a mile slow race, points to be credited to cars which make the best performance on each mile without changing from their high speed gear; an owners' driving contest at 25 miles for fully equipped cars; a series of trade races in which the manufacturers or dealers may organize their own fields of cars, of their own make, under their own conditions; a dealers' runabout selling handicap, in which the entrant may enter a car at any price he chooses, receiving a price handicap of one

CHICAGO-NEW YORK RECORD TRIAL OF FRANKLIN RUNABOUT

From	To	Miles	Arrived	Schedule time	Actual time	Miles per hour	Driver
Chicago	Elkhart, Ind.	133	7:30 a. m.	6:00:00	4:30:00	29.5	Daley
Elkhart	Bowling Green, O.	145	1:05 p. m.	6:30:00	5:35:00	26	Bates
Bowling Green	Cleveland, O.	125	5:40 p. m.	5:30:00	4:35:00	27.3	Talbot
Cleveland	Erie, Pa.	118	9:20 p. m.	5:30:00	3:40:00	32.2	Carris
Erie	Buffalo, N. Y.	96	*1:40 p. m.	4:00:00	2:55:00	28.8	Daley
Buffalo	Syracuse, N. Y.	163	8:00 a. m.	7:30:00	5:20:00	30.6	Bates
Syracuse	Newburgh, N. Y.	220	5:27 p. m.	10:00:00	8:52:00	24.8	Talbot
Newburgh	New York	60	7:53 p. m.	2:30:00	2:18:00	26.1	Carris
Total		1,060			39:53:00	26.5	

* Eastern time. Start made at 3 a. m., August 21, central time.

second for each $100, the winning car to be offered for sale at auction at the completion of the race; gymkhana games of an amusing nature and trials for the mile record by various drivers. It was intended to reduce the circuit of the course from 1.39 miles to an even mile and a quarter; but the change has been postponed to next year. On the Saturday afternoon of the week the 24-hour racers will be given a recess of 2 or 3 hours to enable the workmen to water and repair the course as was done at Brighton Park.

ALL ORPHANS CARED FOR

Cleveland, O., Aug. 24—Last year when Cleveland's orphans were given their annual outing many of the youngsters had to be left weeping at home because there were not cars enough to take care of all of them, but this year, perhaps with the gain in population, Cleveland's heart had a corresponding growth, for all the children were accommodated even to the smallest and there were fifteen or twenty cars to spare. The event held last Tuesday was the fourth annual event of the kind and it was by far the most successful yet held in Cleveland. Nearly 300 cars were furnished and more than twice as many youngsters accommodated than heretofore. The program included a ride through the park and boulevards with a dinner on the lawn at Gordon, after which the youngsters were taken to the three different amusement parks in the city.

PROBE RACE SCANDAL

Chicago, Aug. 28—Testimony was taken this afternoon by the committee appointed by the Chicago Automobile Club to investigate the scoring of the recent 24-hour race at Harlem in which the victory of the Coey Thomas over the Matheson was disputed by Paul Picard, the Matheson representative here. The committee consists of S. S. Gorham, N. H. Van Sicklen and L. E. Myers and the session was an open one and was well attended. The committee heard part of Matheson's case, adjourning indefinitely because of the absence of necessary witnesses. It was claimed the scoring had been faulty and that the work had cost the protesters a well-earned victory. In support of their contentions they introduced affidavits from the score keepers and had several well-known tradesmen testify that they had kept scores that did not tally with the official one.

TALK POWER RATING

New York, Aug. 28—Special telegram—The executive committee of the A. L. A. M. at its session today discussed the adoption by American makers of the horsepower rating of the Royal Automobile Club of Great Britain and Ireland, which was accepted by the association's engineers at its meeting recently at Hartford. Another session will be held tomorrow, when show matters will be considered by the members of the committee.

ENGINLS IN LONG TEST

Rolls-Royce Does 14,371 Miles in Non-Motor Stop Run, While Hotchkiss Tries to Beat It

London, Aug. 18 — Officials of the Royal Automobile Club have made their examination of the Rolls-Royce Silver Ghost, which on August 8 completed a run of 15,000 miles in 40 days, of which 14,371 miles constitute a non-motor stop record. The car had gone 629 miles when an involuntary stop was made, caused by failure to turn on a gasoline tap. From that point on, however, the motor ran night and day without a stop, four relays of drivers handling it. The club officials now are preparing their formal report of the wear and tear to the motor occasioned by the trip.

At the present time England is taking great interest in these non-motor stop runs. The performance some time ago of a Siddeley started the excitement and the Rolls-Royce added to it. Even now the Hotchkiss is trying to beat the mark made by the Silver Ghost, it having covered 9,273 miles up to August 10 under the espionage of the Royal Automobile Club. Like the Rolls-Royce, the Hotchkiss went 937 miles without a stop, then had to start over, the result being the present total of 9,273 miles. The machine is the one which made the long run through France carrying parts and its crew making all repairs and replacements. In all the Hotchkiss had done 20,523 miles up to August 10, of which 6,250 were made in France.

Upon the completion of the Silver Ghost's 15,000 miles the car was driven to the Royal Automobile Club's garage and there the motor was taken down. While no official report has as yet been made public, those who took part in the ceremony were astonished at the way the car had stood 15,000 miles of batting over all kinds of roads. It is the duty of the committee to report on just what repairs are needed to make the car equal to new and the informal report is surprising. Seven replacements are necessary, according to those who looked on. Two front pivot vertical pins on the motor, which have been worn 5-1000 inch, will have to be replaced; there will have to be fitted a universal joint in the magneto drive; the valves will have to be ground; it will be necessary to replace the sphere in the pendulum lever of the steering arm which is worn 5-1000 inch; to refit the socket to the steering tube; to replace the pin at the end of the cross steering rod which is a few millimeters slack, and the pump spindle will have to be packed. This does not necessarily mean that these replacements and adjustments have to be made to enable the car to run, but the work must be done in order to have the car come up to the equal to new order.

The fly in the Rolls-Royce ointment came at 629 miles when an involuntary stop was made. It was only for a minute, but it caused as much consternation as did that piece of waste that brought to an end the non-motor stop run of the Thomas Flyer in the United States last winter. At the time the car was traveling over rough roads and the jolts and jars caused a gasoline tap to shake shut, bringing the motor to a brief stop. The trip caused so much talk that F. Allen of the map department of the Royal Geographical Society has calculated where the distances of 629 and 15,000 miles respectively would fall if measured to the eastward around the earth on London's line of latitude. The learned one declares the 629th mile would be about 10 miles southeast of Spemberg in Germany, while 15,000 miles would bring one 200 miles west of Cape Clear, on the west coast of Ireland.

JAIL SENTENCE FOR SCORCHER

London, Aug. 17—The sensation of the week is the sentence of 1 month's imprisonment inflicted on D. M. Weigel, the maker of Weigel cars, for overspeeding. The charge against Weigel is that he drove one of his grand prix eight-cylinder racing cars down to Brighton prior to that event at a 56 miles per hour pace, refusing to stop when signaled and endeavoring to escape by raising such dust as would obscure the number plate. An appeal has been lodged. There have been a few imprisonments of chauffeurs for similar proceedings but this is the first time that a prominent personage has been sentenced. For some time even motorists have been expressing the opinion that the furious driving nuisance could only be abated by making some severe examples and if the evidence offered by the police in Weigel's case was true he quite deserved his month. Even in a blazed out old land like this no man can put himself above the law without being prepared to get shoved under if trapped.

POPE CREDITORS MEET

Chicago, Aug. 25—One hundred and ninety-one creditors of the Pope Mfg. Co. were represented at a meeting held here on the 22d, pursuant to a call issued by the Badger Brass Mfg. Co., the claims aggregating $1,300,000. L. M. Wainwright, of the Diamond Chain and Mfg. Co., was chosen chairman and N. H. Van Sicklen, of Motor Age, secretary. The meeting passed resolutions regretting the financial troubles of the Pope Mfg. Co. and its allied companies and appointed a committee consisting of George A. Yule, L. M. Wainwright, Charles N. Gillett, C. F. Splitdorf and F. A. Yard to act for the creditors. Also it was decided to suspend all action upon claims until this committee reports back to the meeting. The committee and C. B. Hoffenberg, attorney for the Badger Brass Mfg. Co., will meet in Hartford, August 28, where they will confer with the Pope people.

The Western News Company of Chicago
and Its Branches Supply Newsdealers
N.H. Van Sicklen, Manager

MOTOR AGE

Subscription Two Dollars a Year. Foreign and Canadian Subscription Four Dollars
Charles P. Root, Editor

1200 Michigan Avenue, Chicago
Published Every Thursday by the Trade Press Company
Entered at the Chicago Postoffice as Second-Class Matter
New York Office 29 West Forty-Second Street

CONFIDENCE STILL REIGNS

GENERAL prosperity may be set down as the cause for the entire confidence that seems to reign, notwithstanding the fact that the motor car industry has seen a little flurry in the form of a few failures in its ranks. With a single exception all the failures up to date have been so insignificant to the trade as a whole as to hardly cause comment and to make little if any difference in the commercial world. Certainly nothing has cropped out to indicate that there is to be any sort of a slump in the motor car market and most of the concerns engaged in the manufacture of cars are going ahead as if nothing had happened, although, of course, they have had their eyes opened to possibilities and perhaps have become more cautious than they might have been had the failures not been recorded. Reports from all directions indicate that the makers as a rule are well satisfied where they stand and that they look for a prosperous season next year—and this is further indicated by the fact that the manufacturers of parts and accessories are so well stocked with orders from responsible houses that they are busier than ever endeavoring to fill them. The early shows will be welcome to the manufacturer who has not booked orders for his entire output, inasmuch as they will give him ample time to secure orders and then make deliveries early enough to permit his agents to dispose of their goods so that customers may enjoy a full season's enjoyable use of their cars.

TEST THAT MEANS MUCH

PRINCE BORGHESE must have heaved a sigh of relief when he drove his car into Paris after his 40-day journey from Pekin, China, and yet he will have so much pleasure in recalling his ventures after he has recovered from the hardships of the journey, and has by contrast realized the blessings of civilization, that he will never regret the task to which he submitted himself. Disregarding the condition of what may by a stretch of imagination be called roads, the journey of the caravan of modern motor cars must naturally have opened up a new field of operations. It is true the country traversed is by no means a rich one at this moment, but it is filled with natural resources upon which at some future time the world must depend to a large extent to supply many of its needs, and when these resources have been turned into the medium of exchange and the people therein have been taught the benefits of modern things, the motor car will be as much of a necessity as anything that can be named, not even excepting the railroad. Some day the prince and the others who took part in the Pekin-Paris race will thank themselves that they were responsible for aiding in opening this vast and comparatively unexplored territory.

SIX-CYLINDER CARS

STUDENTS of the motor industry in this country do not take the view that all cars will be of the four or six-cylinder patterns — they believe there is such a diversity of roads and people and uses to which a car may be put as to warrant the manufacture of one, two, four and six-cylinder creations, and there is every indication that this will be the result. It cannot be denied, however, that the six has found a lasting resting place and that year after year its advocates will be increased in number. Many makers have been somewhat shy over the proposition, but gradually it has been seen that the trend is toward this type of car and they have determined to make what people seemed to want, although believing the four is sufficiently capable of doing any work that it may be called upon to do. Some of the oldest makers have absolutely refused to touch the six, whereas others equally as experienced have decided to build nothing else. Each has his own good reason for believing he is right —and each is right, in a way. The fact that some cling wholly to the four and others give all their attention to the six means a division of the work, in a sense bringing the business to a state of specializing, by means of which each may hope to serve individual ends better than if several models are produced each year. It will require at least a couple of years of experimental selling to determine which will satisfy the public better, the six or the four-cylinder car. But this is a world of progress and of rapid strides and is it not possible that in shorter time than one may now believe something will appear to stop the argument over four and six-cylinder efficiency by giving the world something vastly superior?

FRENCH TRADE UNSATISFACTORY

INFORMATION from France tends to support the stories that the French trade is not in so satisfactory a state as might be desired and that because of the fact that the makers there have gone ahead blindly and have stocks of chassis on hand there will be a curtailment in the 1908 output of the leading French factories. This situation applies in the main to the concerns that have been making immensely high-powered touring and racing cars, the demand for which has apparently fallen off to no inconsiderable degree. For the past two seasons the demand for these road monsters has declined, whereas there has been an increased demand for cars of medium price and with medium power. It has been found that the 80 and 100 and 120-horsepower touring cars are not even desirable even with the perfect French roads, for the element of expense of upkeep is now taken into consideration and is too much for even the ordinary rich man to stand. There is every chance for the makers of medium-priced and medium-powered American cars to find a market not only in France but in other foreign countries, but this market will not be opened to the Americans without a struggle and without some action on the part of the foreign governments should it be seen that the home trade is apt to suffer materially. The market is there and is even at this time awaiting some venturesome and insistent American maker who can turn out more vehicles than he can sell at home.

SHOWING SUPERIOR QUALITY

ENGLAND has taken to the non-stop motoring game and has pretty close to 15,000 miles to the credit of one car, which must be admitted is pretty good going. Furthermore, an examination of the working parts of the car after the 15,000-mile run—by officers of the Royal Automobile Club, by the way —revealed the fact that there were but three minor replacements and as many adjustments made in order to place the car in as good shape as when new, all of which speaks volumes for the progress made in the motor car manufacturing world. It must be remembered that a non-stop test is the most severe that could be devised, inasmuch as any needed adjustments must be left undone. No ordinary piece of machinery, such as a locomotive, would stand any such strain without showing serious wear in many of its parts.

DRIVING a motor car from Chicago to New York—nearly 1,000 miles and over some pretty bad stretches of the none-too-good American highways—inside of 40 hours certainly is a record that will withstand many an onslaught. Motor Age makes the prediction that it will not be touched this year. The record scored by the Franklin is certainly a boost for the air-cooled and light-weight car, and while it may be that all motor car owners do not care to get over the ground so fast as did the Franklin, it shows the possibilities of the motor car and will doubtless lead to something more startling. There was a strong combination working in this particular record-breaking work—ample power, light car, good drivers who knew every inch of the road, moonlight nights, roads in as good average condition as they are apt to be found—but this should not detract from the performance of the little car.

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FRENCH motor racing authorities do not wait until the last moment to decide about their racing events and thus cause their makers endless and sometimes needless expense—they go ahead and make their announcements at least a year ahead. There will be a grand prix for 1908 and in all probability the Dieppe course, the same as that used this year, will be selected, although this matter has not been definitely settled. Even the regulations—those adopted at the Ostend conference—have been settled upon, so that the makers who intend competing in this big event need have no fear that after they have spent thousands of dollars in constructing racing cars the event of the year will be called off. This is a little hunch for the racing board of the A. A. A.

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NOTHING, apparently, can induce the racing board of the American Automobile Association to alter its determination to not hold a Vanderbilt cup race this year, whether there is an available course or not. Long before it was too late to complete the necessary arrangements for such a big motoring event several sections of the country made earnest effort to secure the race, but to no purpose. Furthermore, the racing board and Chairman Thompson did not deem it worth while to even consider another course, and yet it turns out that some of those who had made bids for the event were more serious than Mr. Thompson gave them credit for being. Either Mr. Thompson took all the applications for the race as jokes or was too loyal to Long Island and the east. Now it appears the Californians were not so easily put off and so sent a committee to see the racing board and endeavor to have the plans so altered as to have the race run and run on California roads. They have been told, however, that there will be no race this year—and that settles it. The east couldn't have it and so no other section should have it, for the Racing Board of the East is in authority.

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CHICAGO is showing that it is far from being off the motoring map; she is keeping before the public with her contests and is making motorists rapidly. So far she has promoted an immense reliability run and a hill-climb that not only had novel features in their makeup but which were run practically without bringing out a word of criticism. Now she has scheduled an economy test at a distance of an even hundred miles. Whether the record this year will show that cars can be more economically handled than they could a year ago is something to be determined and something about which the weather man may be consulted. This will end the season's work so far as pleasure cars are concerned, but a series of tests for commercial cars has been announced for the week of the Chicago commercial show, which is the same week as the exhibition for pleasure cars, from November 30 to December 7.

AUTHORITIES in England have come to the conclusion that ordinary measures are not sufficient to put a stop to the scorching habit contracted by motorists and have resorted to giving quieting doses consisting of jail sentences, to see if this will have the desired effect. As a result Weigel, the well-known British maker, has been given a month's jail sentence and is now supposed to be doing time. There is no need to stretch the imagination to believe this will have the effect of curbing some of the drivers who cut loose when they get out on those beautiful English roads. If an American motorist could only get one taste of such roads as are in England he would be willing to go to jail for a period of a whole year.

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AMERICAN cars have proved their superiority over those of England in the dust trials that were recently held abroad. In these trials two of the three classes were won by White and Stanley steamers, while England won the other one. Whether the steam car can be classed ahead of the gasoline car in the matter of not stirring up dust—and, if so, why—will be something over which the engineers may ponder. Whatever merits the steamer may have over the gasoline car in this respect it is something of a victory for American cars and one which the British have very cheerfully admitted.

THE WEEK IN BRIEF

White and Stanley steamers winners in two of three classes in English dust trials.

Three hundred orphans given day's outing by Cleveland motorists.

Prince Borghese tells thrilling story of adventures in Pekin-Paris race.

Chicago Automobile Club's committee investigates Harlem 24-hour race, protested by Paul Picard.

Chicago Motor Club announces rules and conditions for its economy run to Valparaiso and return September 13.

Automobile Club of France arranges for 1908 grand prix, which will be held between June 20 and July 5, probably over the Dieppe course.

Pope creditors hold meeting in Chicago and decide to suspend action on their claims until the committee reports result of its investigation.

Franklin four-cylinder runabout cuts big slice off Chicago-New York record, reducing it from 56 hours 58 minutes to 39 hours 53 minutes; also beats Buffalo-New York mark.

Rolls-Royce car, the Silver Ghost, travels 15,000 miles in 40 days, 14,371 miles being a non-motor stop performance; Hotchkiss after the record.

James Couzens, of Ford Motor Co., returns from European trip covering 19,000 miles and declares there is fertile field abroad for American motor car manufacturers.

COMING MOTOR EVENTS

Canadian Reliability—Four-day reliability tour of Winnipeg Automobile Club, August 30-31, September 1-2.

Florio Cup Race—Annual Florio cup race over Brescia circuit, Italy, September 1.

Motordome Meet—First meet of Morris Park Motordome Club at Morris Park, N. Y., September 6-7.

Pittsburg Meet — Pittsburg Automobile Club's meet at Brunot's Island, September 9-10.

Chicago Economy Test—Second annual economy test of the Chicago Motor Club and Chicago Automobile Trade Association, September 13.

St. Louis Reliability Run—Automobile Club of St. Louis, 90-mile reliability run for owners only, September 14.

Hartford Hill-Climb—First hill-climb of Hartford Automobile Club at Hartford, Conn., September 21.

A. C. C. Show—Automobile Club of America's annual show at Grand Central palace, New York, week of October 24-31.

New York Show—A. L. A. M. show, Madison Square garden, November 2-9, M. L. Downs, 7 East Forty-second street, New York.

Chicago Commercial Test—First annual test of commercial cars, Chicago Motor Club, November 30 to December 7.

SEES CHANCE ABROAD

James Couzens Returns from European Trip and Tells of His Foreign Observations

New York, Aug. 24.—James Couzens, secretary of the Ford Motor Co., returned from Europe Wednesday on the Kaiser Wilhelm der Grosse, after a 3 months' trip abroad in looking over foreign territories with a view to an extensive export campaign by his company next year. He covered 19,000 miles, visiting thirty-eight cities, in every European country but Greece and Turkey, in company with R. M. Lockwood, manager of the Ford company's foreign department. Mr. Couzens spent 32 nights in sleeping cars and in boats on his long trip.

Mr. Couzens believes there is a fertile field abroad for American motor cars, but it must be carefully tilled and business transacted in European ways. Of late years there have been comparatively few American cars sent abroad and the only impression the foreigners have of American machines results from what were shipped abroad 5 or 6 years ago. The foreigners are friendly to American products in general, but to get a proper foothold the European situation will have to be carefully studied. Mr. Couzens secured a record of the number of cars in every town in Europe, and the number of people able to buy new machines. He visited London, Amsterdam, The Hague, Rotterdam, Antwerp, Brussels, Paris, Barcelona, Madrid, Nice, Monte Carlo, Genoa, Turin, Milan, Rome, Venice, Vienna, Warsaw, Moscow, St. Petersburg, Budapest, Helsingfors, Stockholm, Christiana, Gothenburg, Copenhagen, Hamburg, Berlin, Cologne, Frankfort, Heidelberg, Carlsruhe, Strassberger, Zurich, Lucerne, Paris and Cherbourg.

"The prospects for American manufacturers in Europe would appear to be good if they will meet the conditions and requirements of these various countries," said Mr. Couzens, "but to attempt to do it on the lines on which business is done in America would make it a fruitless task. The European public is not unfriendly to American goods in general, but it is somewhat unfriendly to American motor cars, due to the many unsatisfactory and unprofitable experiences it has had in importing American small cars during the early days of the industry. All cars, of course, at that time were not nearly so satisfactory as they are today, but the impression was left, with no attempt made to correct it. It is, therefore, the difficult task for all American makers to correct this impression and convince the Europeans that we have improved our product and that it is now equal to any product in the world and cheaper, due to the advanced methods of manufacturing. There is no demand for cars in Europe, as the majority of the European manufacturers are overstocked and are exerting efforts to create a demand. There is no demand for cars except as one may cultivate it, and it is up to the American manufacturers if they want the European business to create and cultivate a demand."

Mr. Couzens was met here by Henry Ford and drove from this city to Boston in a Ford six to pay a visit to the Ford representative in the Hub, Charles E. Fay. Gaston Plantiff accompanied them.

CONFIDENCE IN DETROIT

Detroit, Mich., Aug. 26—The passing of the mushroom age of motor car manufacturing and the advent generally of a safe, sane and conservative era of production of the standard type, is now being celebrated in Detroit and there are few connected with the trade who do not welcome the change. It had been freely foretold by the most enthusiastic friends of the motor car that the present development was bound to occur. The certainty that the motor car had come to stay, the prosperity of the established factories and the large individual fortunes that had been made have inspired, during the past 2 years, the establishment of many factories. During the past month five concerns in Detroit have entered on bankruptcy court careers. Two of them are still running; one more may resume operations. That the collapse of several of the minor local concerns has reflected no lack of confidence on the important Detroit factories is demonstrated in many ways — most prominently, perhaps, in the huge additional investments now being made by Packard, Cadillac, Ford, Northern and others. Nor is there a skilled mechanic in the city out of work because there is no place for him. As it has been for years, the demand for workmen is still in excess of the supply, at practically every large Detroit factory.

ARRANGE 1908 GRAND PRIX

Paris, Aug. 17—The Automobile Club of France has taken up the 1908 grand prix quite early and the date, the type of car and the course are all officially decided upon. The date will be between June 20 and July 5. The cars will be raced under the formula adopted at the Ostend conference recently held reported in Motor Age August 1. That is, there will be a minimum weight and a maximum bore, exactly as adopted by the conference. It is considered that races on these lines will be held in other countries as well as France in view of the fact that a car built for the grand prix could easily be entered for any other foreign race organized on the international lines above referred to. As regards the course, the Dieppe circuit proved an admirable one this year and the work to be done on it another year is so small it is more than probable that the 1908 grand prix will be raced over the same roads as in 1907.

FUEL TEST IS PLANNED

Chicago Motor Club Announces Second Annual Economy Run to Valparaiso and Return

Chicago, Aug. 27—Following out its principles of always aiming at something that will be of educational value to the industry, the Chicago Motor Club now is prepared to announce the details and arrangements for the second annual economy run, an affair which will be decided on a handicap basis in which the weight of the car with passengers will be divided by the weight of the fuel consumed as expressed in ounces. It is the same scheme as was used a year ago and which proved decidedly successful. This year the route will be changed somewhat. Instead of running to Cedar Lake, Ind., a distance of only 50 miles, the contestants will follow the old route part of the way, continuing to Valparaiso, Ind., instead of turning off into the woods toward Crown Point. It's 50 miles to Valparaiso or so close to it that the committee will have little trouble making it half a century, and so the contestants will be asked to go to Valparaiso and return, making the run an even century.

The course to Valparaiso is one of the best in this section, the only bad going being through South Chicago. It is part of the route followed by the Glidden tour coming into and going out of Chicago, and most of the way is over the famous Indiana boulevards.

The start will be made from the corner of Garfield boulevard and State street at 7 o'clock the morning of September 13. The night before all the contesting cars will have to be turned over to the technical committee at the starting point, where there is a large parking space. The technical committee then will fill the tanks with gasoline, seal them and inspect the cars to see that they come up to catalogue specifications. This done, a detail of Pinkertons will be placed in charge to guard the cars until morning. Each contestant will be allowed to have a representative present during the night, but no one will be allowed to touch any of the cars.

This time the cars will be sealed with metal instead of sealing wax, as was done last year. Also all drain cocks will be fastened securely and every precaution taken to see that everything is on the square. Each contestant as he parks his car will be required to hand over to the committee a catalogue of the concern making the car and the committee will see that the car corresponds in every particular to the specifications called for in the catalogue. It is compulsory that each car carry the number of passengers it is catalogued to accommodate. The committee will not allow any dead weight and will insist that not more than four tire casings and ten inner tubes be carried.

No curtains of any nature will be al-

lowed in front or rear of radiators and there can be no other devices to prevent heat radiation from the motor other than those permitted in the catalogues. The muffler cutout may be used, but disconnecting the muffler pipes from the engine is forbidden.

Entries to the economy run close September 9 with Charles P. Root, chairman of the contest committee, 1200 Michigan avenue. The fee is the same as in the reliability—$30, with $15 of this sum rebated in case the car starts. The numbers will be awarded according to the order in which the entries are received.

INSPECT RAINIER PLANT

Saginaw, Mich., Aug. 24—That the residents of the smaller cities throughout the greater part of the United States deem the location of a motor car manufacturing plant in their city as a benefit is well illustrated by the happenings this week in Saginaw. This year is the semi-centennial of the incorporation of this city, which played a leading part in the great lumbering operations which gave the upper Michigan peninsula world-wide renown, and the opening this week of the new plant of the Rainier Motor Car Co., manufacturer of the Rainier, was made the occasion of holding a home week celebration. Among the special attractions of Saginaw's home week was the presence of the state militia, several regiments of which stopped over on their way to summer camp, and of Governor Warner of Michigan, who in his speech laid special emphasis on the new industry which had just started in Saginaw. Thousands of people, residents and visitors, inspected the new Rainier plant. The manufacturing plant occupies 60 acres of land on the outskirts of the city. Four large buildings, a machine shop, power house, assembling and finishing shop and administration building already have been erected and are now busy turning out the 1908 Rainier cars.

COAST WANTS CUP RACE

New York, Aug. 26—Hoping it might not be too late to secure the Vanderbilt cup race for California, F. J. Linz of the California Automobile Club and vice-president of the dealers' association in San Francisco, called upon A. R. Pardington, acting chairman of the A. A. A. racing board. Mr. Linz says when he left home he had the assurance of Governor Gillette that the city would favor the race and that the militia could be secured to the number of 5,000 men. He says a circuit of from 15 to 45 miles can be secured on the Foot Hills boulevard, giving a 16-mile straightaway stretch if desired. The road is of gravel with only one sharp turn and runs from a town just across the bay from Frisco. He says his associates are ready to arrange for a race any time from November to March. After an interview with Mr. Pardington, Mr. Linz learned that the race for this year had been called off.

CLEVELAND IS IN LINE

Ohioans Card Series of Utility Tests for September 10, 11 and 12—Rules Announced

Cleveland, O., Aug. 26—The Cleveland Automobile Club is making elaborate arrangements for the utility tests which will be held in Cleveland September 10, 11 and 12. The tests will take in all classes of vehicles and the committee in charge is making strenuous efforts to get in early entries. Entry blanks were sent out the last of the week. The fact that the 1907 season is so far advanced and the 1908 models ready to be launched by the majority of makers encourages the committee in the belief that there will be a good entry list. The plans contemplate a 3 days' run of gasoline and steam pleasure vehicles with bonnets and mechanisms under seal and with a disinterested spectator in each car. Also a 3 days' utility test for electric pleasure cars will be held which will show the efficiency in watt hours per ton mile for all electric vehicles under the same system of charging.

At the same time it is planned to have a 3 days' test of commercial vehicles. The commercial cars will be divided into two classes—those designed to carry up to 1 ton and those listed to carry more than 1 ton, making practically a class for delivery wagons and one for trucks. The contest is open to all classes of commercial vehicles, gasoline, steam or electric.

George H. Bowler, chairman of the committee in charge, has received word from the postoffice department that the department will be represented at the contests for commercial vehicles and several of the express companies interested in this development have signified their intentions of having representatives present.

The following are some of the rules regarding penalization of commercial vehicles. Five points for each minute or fraction thereof late in reaching a checking station or control. Five points for each caution received from those in authority for infringement against traffic regulations of the streets of the city of Cleveland. Any car exceeding the city speed limits will be disqualified. For each repair part or replacement to the car a penalty of five points for each dollar in value for same will be deducted. This is to apply whether done upon the road or during the night storage of the car.

For each stop of a gasoline motor, except where permitted by instructions on route card, are to be charged twenty-five points; breaking the bonnet seal costs fifty points each time. For each minute or fraction thereof spent in repairs, adjustments or replacement on car five points will be debited. Contestants will be allowed without penalization to fill oil and gasoline tanks and to turn on and off the lubricator, but can make no lubricator adjustments. Five points per minute or fraction thereof for taking on water will be charged against the car needing it.

The regulations for electrics state that all cars must carry at least two passengers, one an observer selected by the committee. Each car must make a run of at least 40 miles on one charge. The batteries must be fully charged at the end of each run. The running weight with passengers will be used to determine the watt hours per ton mile at the average speed made during the run, determined from time taken at start and finish. These results will be reduced to a speed of 12 miles an hour on the basis of the watt hours being proportional to the square of the speed. Neglecting the weight, and under the same proportion, the watt hours per passenger mile will be determined. These results will be used to determine the efficiency. Cars must average at least 10 miles an hour and must not exceed 15 miles an hour. There will be no restriction to the number or size of cells, which must be specified.

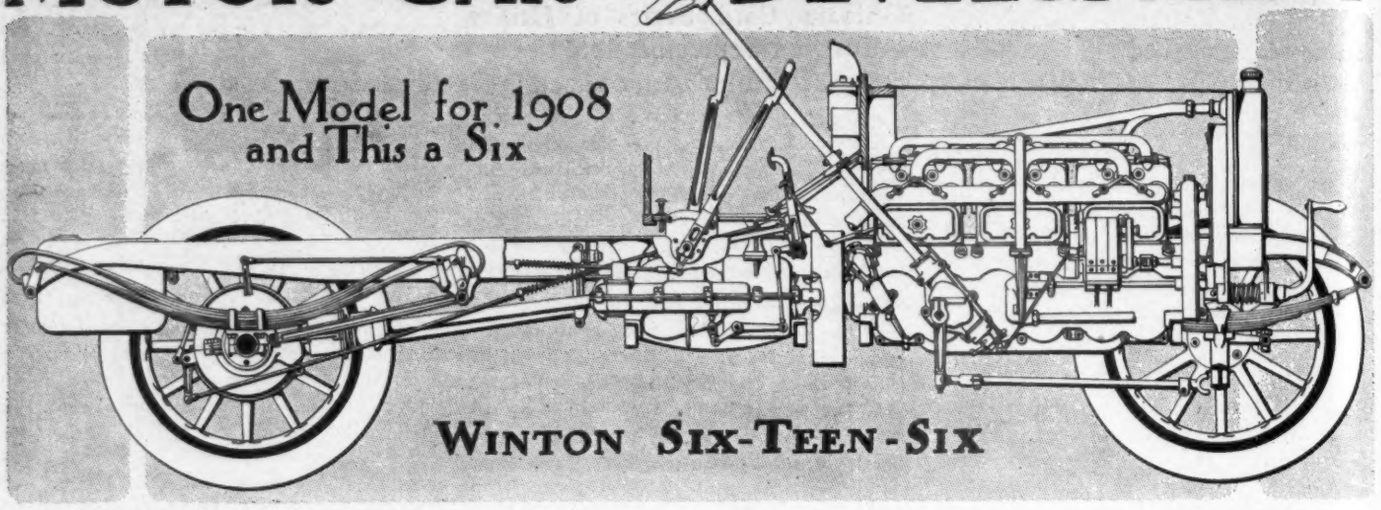
DUST TRIAL RESULTS

London, Aug. 18—According to the formal report made by J. W. Orde, secretary of the Royal Automobile Club, the judges of the recent dust trials have decided the awards. In class 1, for makers' cars of standard design, the winner was Frederic Coleman's White steamer, with a 12-16-horsepower Wilson-Pilcher car second. In class 2, the inter-club competition for amateurs' cars, the Irish Automobile Club won through the showing made by Dermont Monney's 20-horsepower Stanley steamer. The award in class 3 has not as yet been made owing to the large number of contestants. In making the decisions the judges studied carefully the 130 photographs which were taken. The tests were held under most favorable conditions on Brooklands track, a stretch 100 feet in length being laid out in the finishing straight. This course was covered with limestone dust to a thickness of half an inch by the use of gauge rakes between each run of a contesting car.

OIL FOR SEATTLE ROADS

Seattle, Wash., Aug. 24—Oil as an allayer of dust has been given its first trial in the state of Washington. One of the best stretches of road in the state is the macadamized section leading to the Meadows race track, where there is now a season of running races on. Many cars go out daily. Every machine used to raise clouds of dust, and so County Engineer Valentine had the road sprinkled with common fuel oil, which contains about 40 per cent of asphalt and makes an asphalt coating for the macadam. Mr. Valentine is also planning to oil all macadam roads in King county. The expense is figured at $100 a mile by Mr. Valentine.

MOTOR CAR DEVELOPMENT



ON THE WINTON SIX-TEEN-SIX WATER PUMP, MAGNETO, VALVES AND VALVE PIPING ARE ON THE RIGHT SIDE

SIX-TEEN-SIX. This euphonious, trisyllabic bit of motor car nomenclature has been bestowed by Alexander Winton on the one model that will carry Winton colors for 1908. Analyzed, it means the car for next year's trade is a six-cylinder and known as model 16. The Six-Teen-Six is a happy combination of model and design. By this announcement the Winton Motor Carriage Co., Cleveland, O., puts itself on record as a leader in six-cylinder construction, for not alone is the company satisfied with manufacturing a six-cylinder car but every car for 1908 will be of that type. With the company it is 500 six-cylinder machines for 1908; it is focusing the entire factory force on the Six-Teen-Six; it means dropping from an annual production of over 1,000 four-cylinder cars to 500 sixes, meaning that the Six-Teen-Six will pass through the factory with less speed but more care than its predecessors.

By this announcement Alexander Winton becomes the first American builder to pin everything on six-cylinder design. The step is one further than has been taken by Edge, the well-known British maker, who deserves to be known as the father of the six-cylinder car. From building nothing but four-cylinders in 1907 to constructing nothing but sixes in 1908 may appear radical, but this ultra-radicalism disappears when it is remembered that for several years Mr. Winton has been a multi-cylinder man. Back in 1903, when racing abroad with the eight-cylinder Bullet No. 2, his attention was first called to six-cylinder experimental work then under way and it was at once decided to introduce the six style at the psychological moment—that season when the public would be ready for it. In the judgment of the heads of the company that moment has arrived, the public having heard little during the last 12 months than "three impulses per revolution," "constant torque" and "no changing of speeds and ease on all bearings and car parts." All this prompted the decision of the Winston company to turn its attention to the six-cylinder car.

It does not appear as yet what horsepower the Winton Six-Teen-Six is, but those motor wise can figure it for themselves, the bore measuring 4½ inches and the stroke 5 inches. According to the horsepower rating formula of the A. L. A. M. the car would be rated at 48.6 horsepower, this coming from squaring the cylinder bore, multiplying by the number of cylinders and dividing by the constant, 2.5. In other respects the Six-Teen-Six is no strippling, neither is it a Goliath. Its wheelbase, measuring 120 inches, is from 6 to 8 inches shorter than that on several four-cylinder machines, yet its body is for seven-passenger service. The road wheels are 2 inches larger in diameter than any previously used on Winton cars measuring 36 inches. Tires are 4½-inch Goodrichs.

WINTON-SHANKS AND SIX-TEEN-SIX

The Six-Teen-Six is in many respects a continuation of the model M of this year in that the multiple disk clutch remains in improved form; this selective gearset is retained but altered in that the fourth forward speed is dropped and direct drive is now on the highest speed; Timken rollers still carry the front road wheels and rear axle system; and steering, brakes, gasoline system, springs, cooling scheme and frame are as in the present model M. But the Six-Teen-Six has outstripped the present M in many respects. It has a double system of ignition, the major one an Eisemann high-tension magneto carrying its own distributor, and the minor one with storage cells as the current producers. There is still another modern acceptance—the Six-Teen-Six has a two-jet two-throttle carbureter of that style in which the throttle operate progressively, the smaller opening first and later automatically picking up the larger one and carrying it along. The Hill precision oiler of 1907 is replaced by a gear-driven Hancock with twelve adjustable leads and sight feeds. Many other details and refinements, self-evident to the connoisseur, are components of the Six-Teen-Six.

In the two illustrations in which the motor is shown—one the left side of it and the other the right side as seen in the chassis elevation—the reader is first interested in the combination piping carried well over the cylinder heads. There are four systems. That conducting the water to the cylinders is seen in the chassis elevation in which the pump is centrally

carried on the right and a vertical pipe leads from it to above the cylinder heads, where it unites with a horizontal pipe lying over the cylinders' heads and which has a branch to each cylinder—not to each cylinder pair—entering the jacket above and close to the exhaust valve. The return water flow has a gradually ascending pipe connecting with the top of the radiator and joined by a branch from each cylinder pair. The exhaust manifold, of Fiat style, lies horizontally along the valve chambers and drops beneath the dash to the muffler level. Lastly comes the intake manifold—always a problem in sixes. To appreciate it the reader must look first at the chassis elevation in which it appears above the exhaust manifold as a very flattened letter M, the three bottom points connecting with the three cylinder pairs. Looking next at the left side of the motor illustration a V pipe hugs the top of the middle cylinder casting, its branches crossing to the opposite side, where they unite with the two top parts of the M pipe on that side and already mentioned. To appreciate the wisdom of this piping arrangement glance again at the two illustrations of the motor. On the right side is the entire valve mechanism, accessible beneath the exhaust manifold, which is the lowest piping, but slightly hampered by the magneto carried alongside of the front cylinder pair. On this side the vertical water pipe offers but slight obstruction. On the left side of the motor there is nothing but the carburetor, but on this side are three large inspection holes for access to the crankcase, there being nothing on the motor to interfere with the driver reaching them and working through them.

The Six-Teen-Six motor carries many Winton marks. Instead of dividing the crankcase into upper and lower halves and carrying the crankshaft bearings between them the designer continues to divide it vertically in the plane of the crankshaft bearings, securing the bearings to one-half,

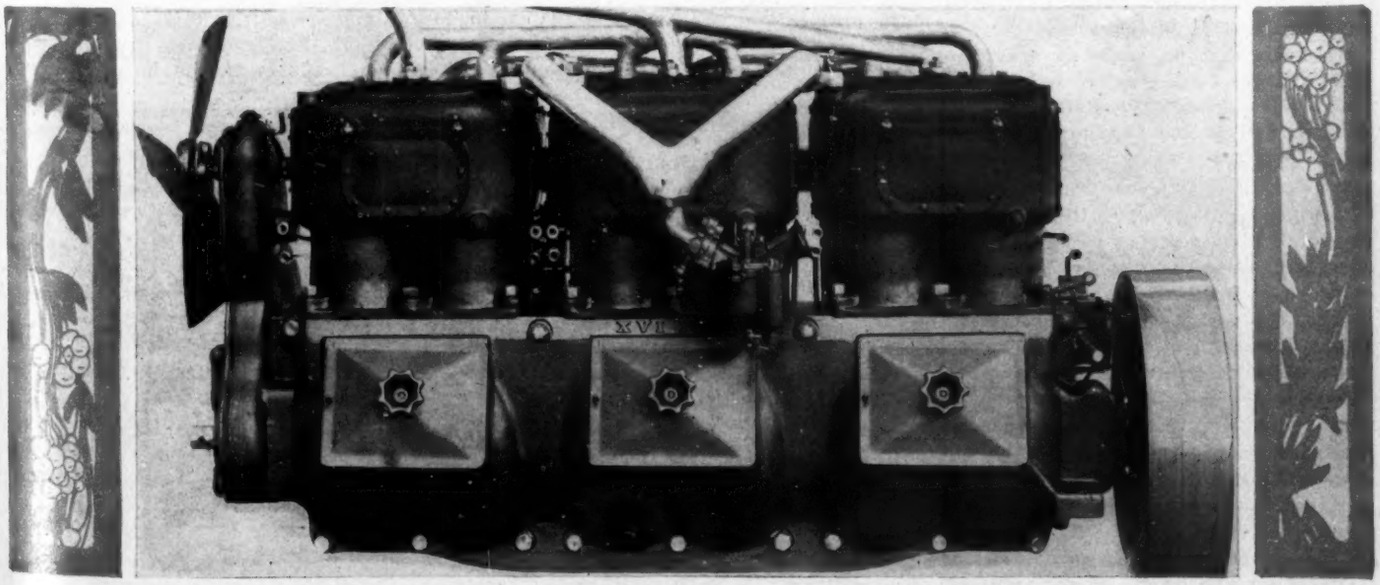
SIX RESEMBLES THE FOUR

thereby permitting of moving the other half horizontally and leaving the crankshaft, crankshaft bearings and lower ends of connecting rods exposed for examination or repair. Considerable reduction in the crankcase size has resulted from restricting it by the crankshaft bearings and expanding it sufficiently opposite the cylinder castings to accommodate the throws of the crankshaft. Waterjackets are readily cleaned, through the medium of large plates forming the waterjacket walls on the left, and also on the front and rear, and to the large oval plates covering the tops of the cylinders—the last new points.

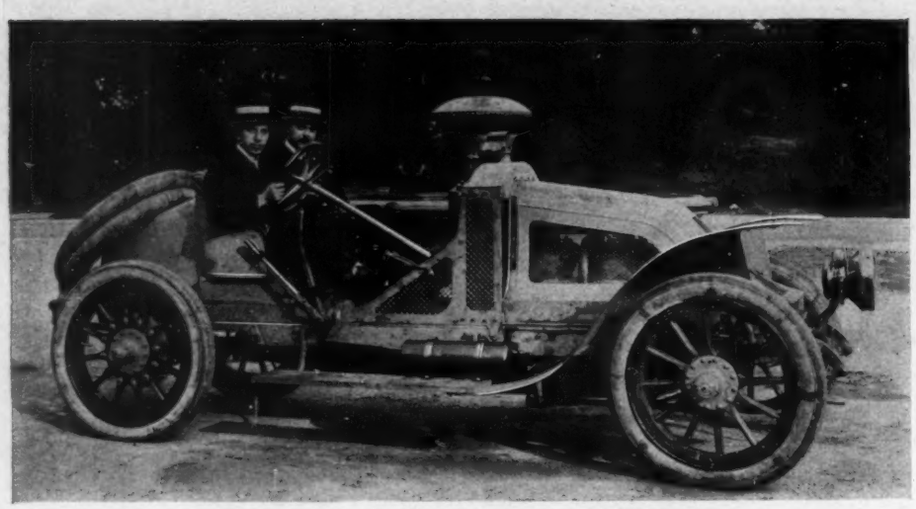
Both sets of mechanical valves are operated from a single camshaft carried within the crankcase on the right. The lifter rods and valve operating mechanisms are enclosed in pockets covered by quick-detachable steel plates. The camshaft is removable through the front end of the crankcase and at the forward end of the case is a housing for enclosing the half-time and other gears, which are of hardened steel alternating with brass or white fiber. In this housing are enclosed the gears for driving the fan, which drives through a friction clutch so jerks are softened when starting. In oiling, the twelve leads from the Hancock oiler pass directly to the motor parts, the twelve unions for the leads showing in the left side illustration four between the cylinder pairs and two ahead of the front pair and two back of the rear pair. These leads connect with the cylinders, the crankshaft bearings and the crankcase. A separate oil pump forces oil from the crankcase through a filter to the oiler, thus using and reusing the oil.

Six-Teen-Six is the first Winton model to be regularly fitted with a magneto, and the Eisemann, of foreign make, is one that stands foremost in the market. On this model it is carried on a small shelf on the side of the crankcase and is gear-driven, its shaft having a jaw coupling to facilitate removal and insure proper remounting on its bed. Spark plugs are carried horizontally in the cylinder heads on the right above the intake valves.

The Winton carbureter, patterned after one introduced last year, is a simple device in every respect. It is a cylindrical float chamber with two spraying nozzles. The intake air pipe and the piping to the motor are to each other like the arms of a V with the separating angle not so acute. This piping rests in the top of the float chamber, with the spraying nozzles at the angle between the two. The incoming air



CLEAN CUT, WITH ONLY THE CARBURETER TO BLOCK THE ACCESS TO THREE INSPECTION HOLES



RENAULT'S GRAND PRIX GENTLEMAN'S ROADSTER

passes over the top of the chamber in the bottom of the V and in which are the spraying nozzles. The air licks up the gasoline as it follows the pipe curvature past the nozzles and by the dual nozzle and throttle control a variance of motor speed is possible by first using the small nozzle, then keeping it in operation and bringing the larger nozzle into use. Gasoline carried in a rectangular-shaped 22-gallon tank beneath the rear of the chassis is forced into an auxiliary tank on the dash, from which the feed is by gravity to the carbureter. The 22-gallon tank has a gauge placed astern and in the tank is a 3-gallon reserve tank which cannot be emptied without the driver's attention first being called to the fact that only the 3 gallons of fuel carried in this reserve compartment remain. Spark and throttle levers, on the top of the steering column, operate on a ring with a taper groove on its inner surface. Springs force taper plungers carried by the throttle and spark levers into the groove, friction causing the levers to remain where placed. Both levers are independent of the steering wheel. An accelerator pedal is provided.

As in model M of this season the multiple disk clutch is carried in a forward compartment of the gearbox and operates constantly in oil. It contains sixty-five disks—model M has forty-nine—and carries 33 per cent more friction surface than the M. Instead of using one large spring for engaging the disks there are six springs which are distributed equi-distantly around the clutch to exert an even tension on the clutch disks. Being carried in a forward compartment of the gearbox, the clutch is easily accessible. Should one of the six springs fracture replacement is a simple task. It is disengaged by a pedal and by this pedal can be locked out of engagement without locking the brakes. The gearset is a standard style with shafts carried on ball bearings and the interlocking mechanism entirely enclosed. The gear shifting lever is carried inside of the emergency brake lever. Power transmission to the rear axle is through a cardan shaft, practically horizontal with the car loaded. A roller type of universal joints is used. Assisting the driveshaft in taking the driving strain is a torsion rod paralleling the shaft and supported at its forward end in a ball joint with upper and lower spring cushioning. The rear axle is a floating construction carried on Timken rollers throughout. Brakes are internals and externals—two of each, all carried on the rear wheels. The internals, designed for emergencies, are lever-applied, their application releasing the clutch. The externals, brought into action by the right pedal, are not interconnected with the clutch. Both sets operate through equalizers.

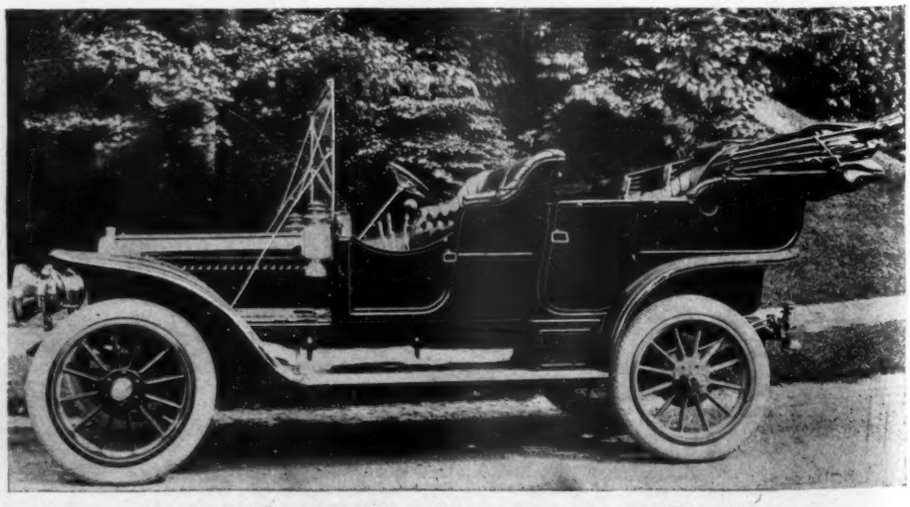
True to its policy of the last two seasons, the Winton company continues the manganese bronze front axle which is made in I-beam cross section and arched heavily downward. In securing the front semi-elliptic springs to this axle one clip, passing through the center of the axle body, bolts the spring to the axle and replaces the double clip so generally used. Steering is through a screw and nut gear with ball thrust bearings, whereas roller bearings are used to take the weight of the car in the steering knuckles.

The Winton twin springs are continued, the front pair with nine leaves made 39¼ inches long and with leaves 1¾ inches wide and the rear 52 inches long, eleven leaves and each leaf 2 inches wide. The clearance is 10½ inches. In the frame the side and drop members are made in one piece in channel section, pressed steel, reinforced with gussets and the motor and gearset are located on dropped frame pieces. A dust pan extends from the forward end of the motor to the rear of the transmission and an apron extends from the base of the radiator to the front end of this pan. Mud guards for the wheels are made of pressed steel and are of goodly size.

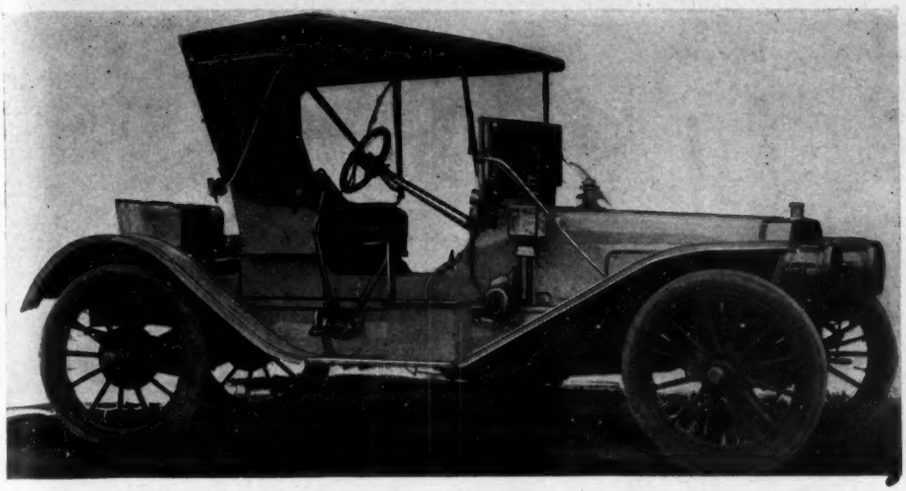
SHOEMAKER—AN ILLINOIS CAR

Among the new cars of the season and which made its public appearance on the occasion of the Chicago reliability run, June 28, and later in the Glidden tour, is the Shoemaker, the product of the Shoemaker Automobile Co., Freeport, Ill., which concern has turned out twenty-five machines this season and hopes to place a hundred or more on the 1908 market. Like many other new products, the Shoemaker is not an entirely home-made car. The Shoemaker people manufacture the transmission and clutch, but receive from outside the four-cylinder motor, the running gear and many other minor parts, but it is the company's intention to use its own motor in another season. The running gear of the car comprises a pressed steel framework, narrowed alongside of the motor, and requiring two subpieces for taking the weight of the motor and transmission. Semi-elliptic springs are used throughout. The front axle is a tubular construction, with Elliott jaw endings, with the tie rod in front, and the rear axle is supplied with standard roller bearings throughout.

The motor employed has a 35-40-horsepower rating. Its cylinders are in pairs, with valves side by side in left-hand ports, the opening being from one inclosed camshaft and novel in the general appearance of this motor is the carrying of the carbureter at the right on a level with the cylinder heads, so the intake pipe crosses



WINTON SIX-TEEN-SIX IN SEVEN-PASSENGER DRESS AND 1908 ATTIRE



RAND'S DUQUESNE TWO-BOW TOP FOR ROADSTERS

in the gap between the cylinder pairs and branches, sending a downwardly curving arm to each cylinder pair. Also featured is the locating of a cylindrical gasoline tank over the cylinder heads, from which the gasoline feeds by gravity to the carbureter. An overflow pipe leads direct to the main gasoline tank carried crosswise beneath the rear of the chassis. Gasoline is delivered from the main to auxiliary tank by a plunger pump carried at the right rear of the motor. It is the intention in next year's cars to remove this auxiliary tank from the top of the cylinders and place it crosswise on the dash beneath the bonnet. Lubricating is by a Hill precision oiler located on the motor bed at the right front, ratchet-driven from the camshaft and supplying oil leads direct to the sides of the cylinder walls. Ignition is by jump spark, with the current taken from storage cells and passed through a gear-driven timer carried above the flywheel and accessible through a door in the sloping portion of the footboard of the car. A four-part coil is carried on the dash and the spark as well as throttle advance is mounted on a quadrant beneath the steering wheel. Plugs are located in the caps over the intake valves and priming cups in the caps above the exhausts.

The cooling of the motor is done by a vertical tube radiator, a belt-driven fan and a gear-driven water pump. The pump is located centrally on the left side beneath the exhaust piping and driven by a lay shaft, geared from the camshaft. The pump draws its supply from the radiator base and the return flow is from the cylinder heads. Instead of the water supply entering the jackets beneath the ports, the intake pipe from the pump crosses between the cylinder pairs, where it branches, delivering the water to the bottom of the jackets on the right. In all other respects the motor construction is conventional. The crankcase is an aluminum construction supplied with inspection holes on each side. Timing gears are inclosed and run in oil and all the moving parts, such as crankshaft, pistons and connecting rods, are of approved construction throughout.

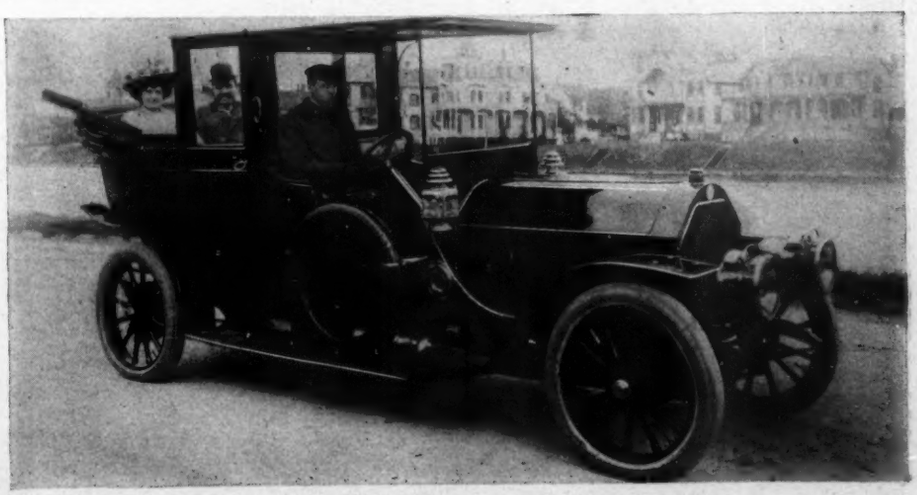
In the transmission system the reader is brought face to face with Shoemaker construction, the introduction to which comes in the three-disk clutch, in which an aluminum disk with cork inserts is clamped between two cast iron disks, the cast iron ones being held to the flywheel by four peripheral studs located at 90 degrees to one another and carrying on them four springs which serve for clutch engagement. The aluminum disk, which weighs but 5½ pounds, is carried on the shaft connecting with the transmission. The transmission, of which two illustrations appear, deserves attention because of its compactness and light weight. It tips the scales at 55 pounds complete and measures but 6⅞ inches between the front and rear bearings. It is of the selective type, affording three forward variations and one reverse, the direct drive being on the high speed. Shaft and gears are made from Krupp E-F-60 chrome nickel steel, the gears with 1-inch and six pitch and the main shaft 1⅜ inches in diameter. Countershaft gears are keyed in position and held in longitudinal relation by spacer sleeves. Each shaft is carried on phosphor bronze bearings, 3½ inches in length. This season these bearings have been lubricated by grease cups, one for each, but in the 1908 car an oiling system will be provided. In obtaining the speed variation direct drive is gained by sliding the front sliding gear over a portion of the large pinion on the shaft connecting with the clutch. An interlocking system is provided, preventing the shifting of more than one gear at once, and the change speed lever at the right moves in a conventional two-slot quadrant. Final drive is by propeller shaft, with universal joints to the rear axle, two torsion rods paralleling this shaft, each rod anchoring direct to the differential housing and connecting at its front end through a ball joint with a spring support on the crosspiece of the mainframe.

Four brakes are fitted, two internal and two external, all faced with camel's hair and operating on the rear wheels. Those for regular use are applied by pedal, those for emergencies by side lever. In both sets an equalizing rod is used, both of which are transverse members located in front of the rear wheels and lying across the side pieces of the frame. They are retained in position by metal straps secured to the frame pieces, which, together with the frame, form slides for the equalizers to work in. In this year's cars cables connect it from these equalizers to the lever and pedal connection, but rods will be used in the future.

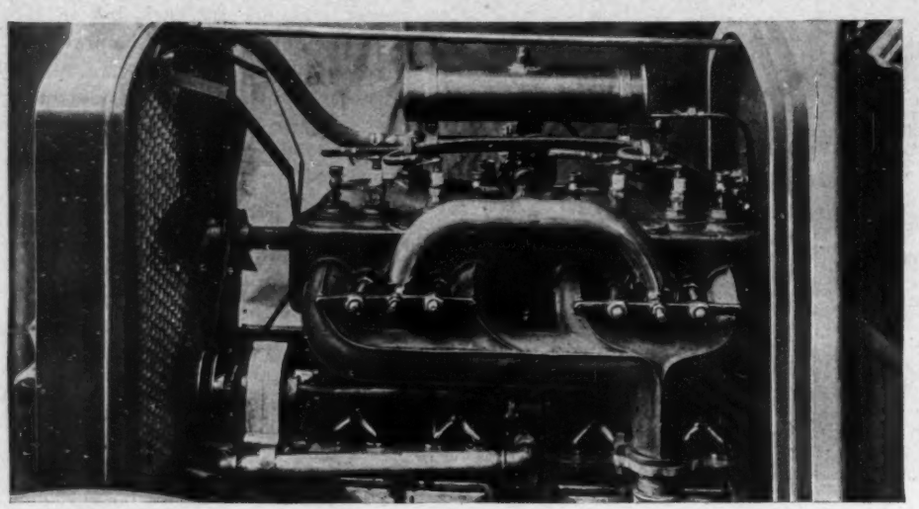
The car is fitted with a conventional five-seven-passenger body built on the straight line principle throughout. Front and rear fenders are connected by running boards and the usual equipment is in place on the car.

NEW STYLE OF TOP

The Rands Mfg. Co., Detroit, Mich., has brought out a new style of folding tops for four-cylinder runabouts or roadsters known as the Duquesne, shown herewith on a Ford six-cylinder runabout. In the Duquesne there is not a bow extending from the side of the seat to the front part of the top, a fact which allows passengers to enter or leave the seat without fear of hitting their heads or assuming a semi-



DARRACQ SIX-CYLINDER LANDAULETTE—A VEDRINE CREATION



PIPING SIDE OF THE SHOEMAKER

crouching attitude. Notwithstanding the absence of this bow the top is made sufficiently long to extend over the dash, so that in inclement weather the wind shield forms a weather-proof front. In raising and lowering the Duquesne the operation is confined to taking two thumb screws from the upper part of the center socket and placing them at the bottom of the same socket. When folded the maker claims the top is more compact than any other style on the market. For driving in cold weather the Duquesne is so constructed that two side curtains can be attached to the edge of the seat by suitable fasteners. On several makes of cars this top can be folded down and still leave room for the rumble seat passenger.

LATEST DARRACQ CREATION

Although not generally used in America the landaulet is much in vogue abroad, and so, with the six-cylinder invasion, it is expected that bodies of this style would soon be used on the chassis of the six. The new six-cylinder Darracq is illustrated with a landaulet body upholstered in blue cloth in harmony with the dark blue color of the body and chassis. It is not difficult to recognize the Darracq features—the long plain hood, with a pair of hand grips at each side—but here the Darracq lines end, the remainder of the body, a Vedrine creation, being made with the top half of the door either permanent or removable, the canopy over the driver permanent and, if desired, that portion of the canopy between the doors permanent, while the covering over the rear seat passengers folds back as shown. On this Darracq model the change-speed lever is to the right of the driver instead of beneath the steering wheel.

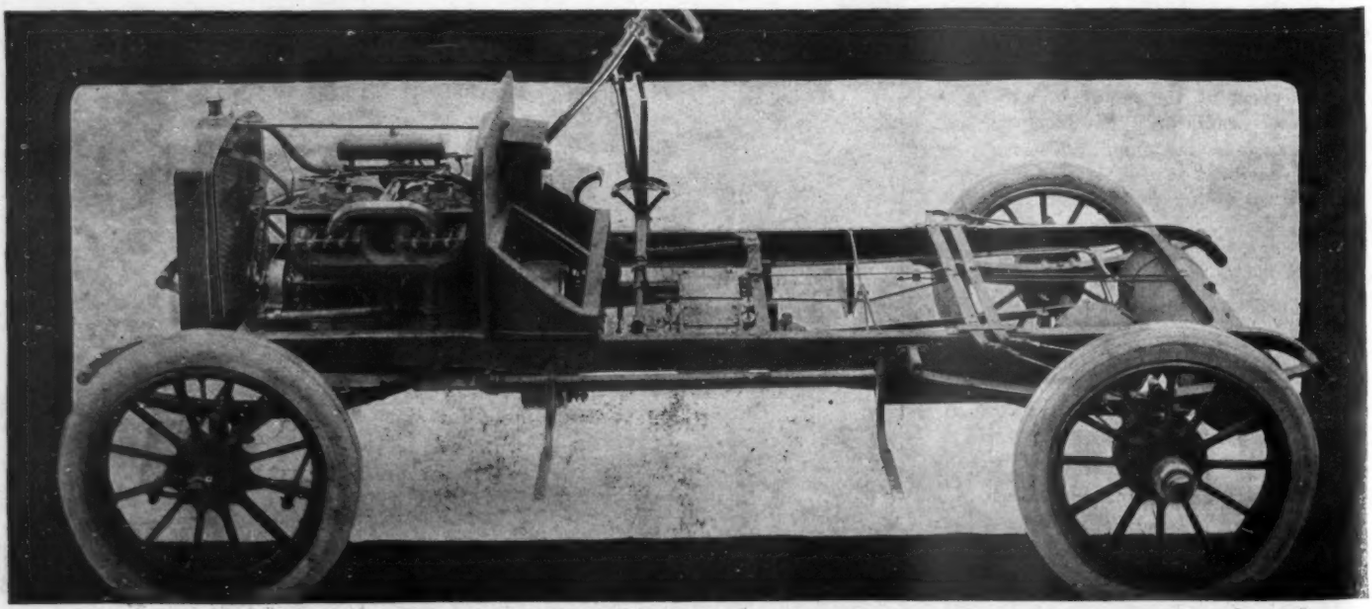
RENAULT TAKES AMERICAN TIP

The example set in America by the Apperson Jackrabbits, duplicates of the Apperson Vanderbilt racer, but with a roadster body, is being followed by Renault people, who are building 35-45-horsepower stock racers which are duplicates on a smaller scale of Szisz' racing car, in which he won the grand prix a year ago and in which he took second place this year. The introduction of these machines in America is due to the purchase by W. K. Vanderbilt, Jr., of ten cars which will be used by himself and friends on the Long Island parkway. The car conforms to general Renault construction by having its radiator form the dash. It is of the four-cylinder variety, with cylinders in pairs, speed variations on the selective principle and final drive by shaft. Novel about this car is the use of screening for the sides and front radiator panels at the bottom as well as the ends of the radiator and between the slope toe board and the frame. Instead of carrying the control levers on the steering wheel they are placed beneath it and the accelerator pedal is outside of the frame. Fenders are not furnished for the rear wheels and those for the front are peculiar in that they hug the tire at the start of the rise, but gradually leave it near the top of the wheel. There are but two lamps, a single head light located centrally in front and the searchlight at the left of the dash. All four wheels are fitted with removable rims. Front and rear springs are wrapped in rope or tape and the gasoline tank forms a sloping deck at the back of the seats.

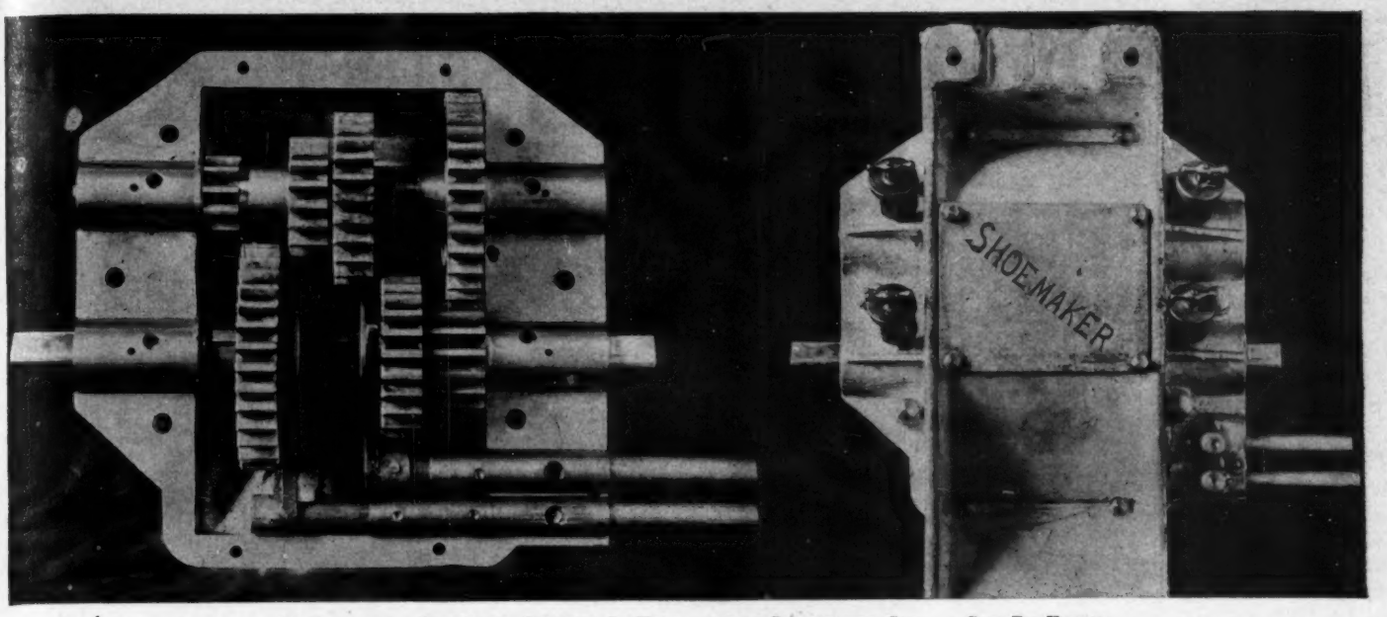
MANUFACTURERS' MISCELLANY

The latest product of the Shawyer Co., Springfield, O., is a ratchet screw jack for cars weighing from 1,000 to 4,000 pounds. The base is of malleable iron, heavily ribbed and dustproof, and the screw is four pitch and with square steel thread. The height over all measures 12 inches and its rise 7 inches. The ratchet works in a grease-tight malleable iron casing from which both screw and ratchet are lubricated, one filling of grease sufficing for a season. The ratchet pawl is of hardened steel.

The Winchester Speedometer Co., New York city, has added a red maximum hand to the dial of its recorders which shows the highest speed registered by the instrument and remains there when the car stops. A



BRAKE EQUALIZERS ARE ABOVE THE FRAME MEMBERS IN THE FOUR-CYLINDER SHOEMAKER CAR



AS COMPACT A SELECTIVE GEARSET IS USED ON THE SHOEMAKER CAR AS CAN BE FOUND

touch of the resetting button releases it and it returns to zero. This company has also added a new model speedometer. The change in this model is the odometer, a smaller one being used. This has resulted in making the speedometer one-third less in size. The maximum speed hand is used on it, it is red in color and is carried by the regular indicating hand.

The Firestone Tire and Rubber Co., Akron, O., in response to the demand for a non-skidding pneumatic tire has placed a dual tread pneumatic on the market. This dual tread is somewhat thicker than the single tread and consists of two ridges of rubber about ⅝ inch thick and from 1½ to 2 inches wide extending around the tire. It is adaptable to tires of 3½ inches in size and upward and may be incorporated in any type of tire during manufacture. It is claimed that this device gives non-skidding features in advance of those possessed by any other pneumatic tire now on the market.

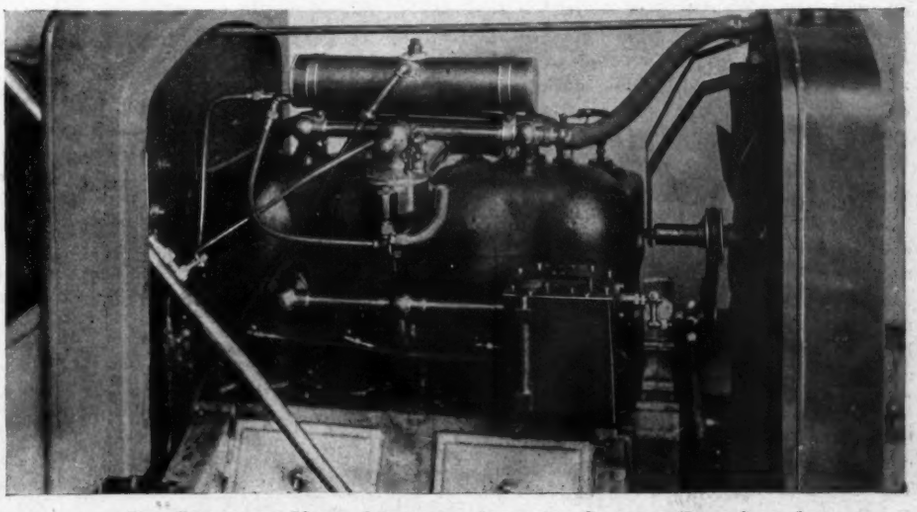
MOTOR CAR LITERATURE

The Road Red Book of the State of New York for 1906, which deals with the improvement, repair and maintenance of public highways in this state, is a 360-page standard-size book containing an accurate story of the complete road work in the state for that year. In the first chapter are given directions for the guidance of road commissioners in towns which have adopted the money-system of working roads. Chapter two contains information and suggestions regarding the improvement of country roads and highways, together with twelve or fourteen pages illustrating the construction of roads, culverts, cement constructions and giving in detail the proper composition of road surfaces and construction of bridges. Chapter three is a treatise on drags and rut scrapers. Following this is general information for the guidance of supervisors, highway commissioners and other town authorities, together with a uniform system of town accounts in money-system towns. Other chapters cover every possible phase of road construction. The last half of the book contains the Money-System, or Fuller Plank Act; also the highway law in full, the county and town laws, and other laws relative to road surveys, road fences, road constructions and road accidents. The last division of the book is 110 pages of tabulation showing the expenditure of money throughout the different counties in the state as well as the expenditure per mile of roads, per acre of land and per capita of population. As a supplement to the book is a large map of the state showing the present road situation, in which the improved roads—692 miles in all—are shown in red lines, the 7,000 miles of proposed improvement in dotted lines, and railroads, trolley lines, canals, boundaries and other dividing lines in different colors. The book is most valuable and interspersed through every ten or fifteen pages are full-page illustrations showing road construction, road repair, dust prevention and other parts of road upkeep and repair.

Charles Burgess, Jr., Wenona, Ill., in his initial book on the Burgess double-tension spring, illustrates two styles of this on a four-page sheet in the front, in which the cylinder-and-piston scheme to which each end of the semi-elliptic spring is attached and which cylinder is in turn pivoted to the spring hanger appears. Five pages of the book are devoted to a closely written, consecutive description of the spring and explanation of its operation.

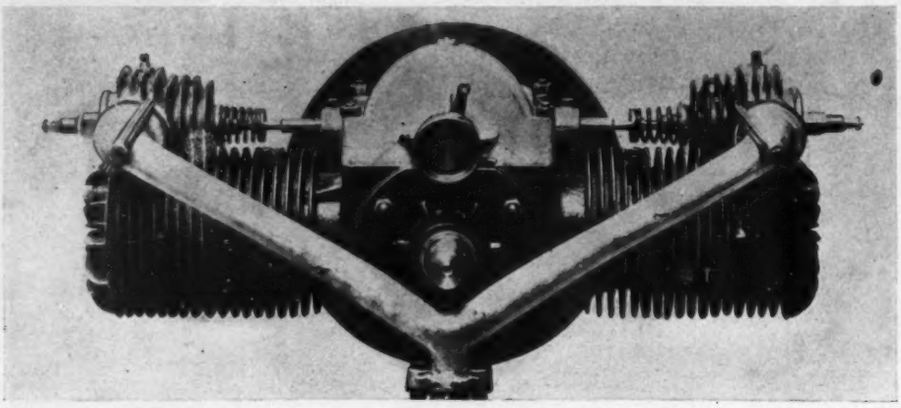
The instruction book of the Witherbee Igniter Co. is a neat little volume of sixteen pages, which is divided as follows: Installation and care of a battery, when to recharge, how recharging is done, recharging from an alternating current, restorage vs. dry cells, and general instructions on the battery, its connections, spark plugs, timers, coils, mileage and coil test.

The O. W. Peterson Mfg. Co., Chicago, Ill., has a very clear and concise catalogue on its new acetylene generator, in which it shows a full-page sectional wash drawing of the generator and on succeeding pages describes and illustrates it.



THE SHOEMAKER MOTOR CARRIES AN AUXILIARY GASOLINE TANK OVER IT

DEVELOPMENT BRIEFS



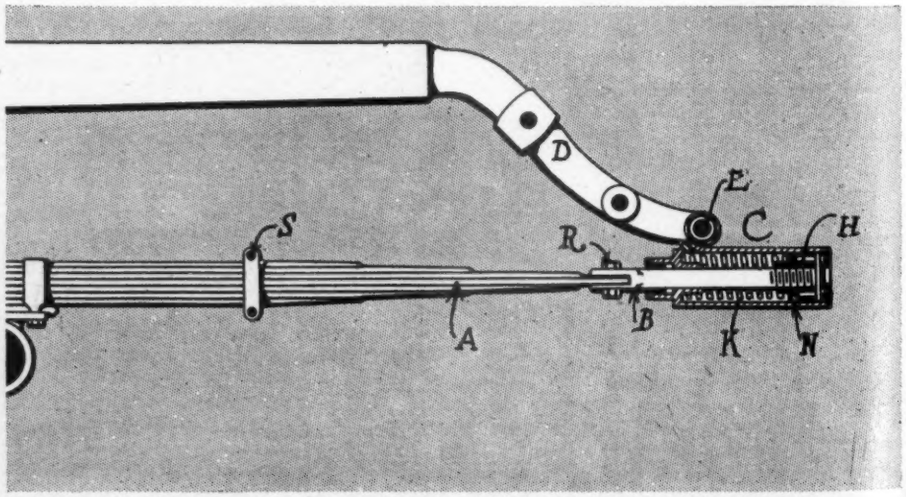
DE TAMBLE AIR-COOLED MOTOR BUILT FOR BUGGY-TYPE RUNABOUTS

BUILDS MOTOR FOR BUGGY TYPES

As an evidence of the general interest taken in the buggy type of motor cars comes the announcement from the Speed Changing Pulley Co., of Indianapolis, Ind., of its new 10 to 12-horsepower two-cylinder opposed air-cooled motor for this class of car. This motor, known as the De Tamble, has 4 by 4-inch cylinders, with the cylinder walls cooled by eighteen integral circular flanges. The valve chambers on top of the cylinders are similarly cooled and the cylinder heads furnished with radial flanges. Its adaptability to buggy motor cars is apparent by the fact that its total weight, including flywheel, is but 185 pounds and that it has been run constantly on the road for 6 hours without showing the slightest distress due to overheating. The two cylinders, with their cooling flanges and the intervening crankcase, form a single casting, the cylinder heads with their flanges being separate castings. This unit casting demands a crankcase with large end openings, which are closed by plates carrying the bearings for the crankshaft. The top of the crankcase is open and is covered by an aluminum housing which carries the camshaft and the valve push rods. Intake and exhaust valves are located in ports, as already mentioned. The intakes are automatically operated and the exhausts mechanically. Spark plugs are placed in the ends of the valve ports. The timing gears are of hard bronze and steel cut from the solid and run in oil. The crankshaft is a drop forging of high-grade steel and finished with a ground surface; connecting rods are carbon steel; wrist pins are ground and run in plastic bushings of high quality, and pistons, rings and pins are ground. The motor complete is 30 inches long, 16¾ inches wide and 17 inches deep, including the flywheel; without the flywheel it is 11½ inches deep. The timer is carried on the end of the camshaft and the carbureter placed beneath the crankshaft at the end opposite the flywheel. The intake is a V with its ends secured to the openings in the valve cages by spanner yokes and tension screws and is easily removed. The entire motor is accessible and well suited to the buggy car.

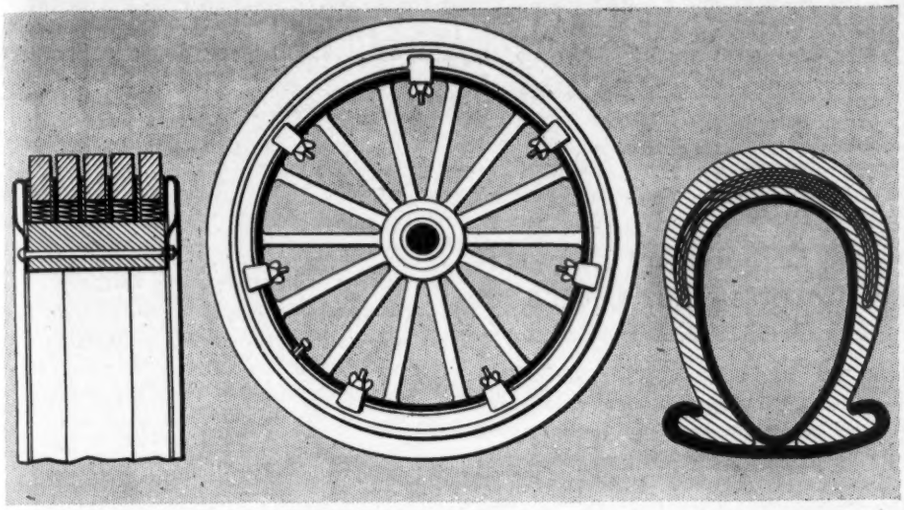
PISTON SPRING SHACKLES

If Robert Burgess & Son, Wenona, Ill., had their way shock absorbers and arched or bowed semi-elliptic springs would become extinct, for they prefer their flat spring, which, instead of shackling to the frame at each end, connects by means of a cylinder and piston arrangement, the piston attached to the longest leaf of the spring and the cylinder pivoted to the spring horn. Seven leaves comprise the spring, but the number in use on cars depends upon the strength of the spring required, a fact determined according to the weight of the car and the speed at which it is to travel. The leaves are placed on opposite sides of the main or central leaf marked A in the illustration. Attached to the opposite ends of this leaf is a piston B working in cylinder C, supported on the spring horn D at point E. The cylinder is constructed similar to the ordinary cylinder in that it and its head are cast in one piece, with an aperture left to receive the piston rod B and packing gland. The opposite end of the cylinder is inclosed by a cap threaded into the cylinder wall. Adjustably mounted on the piston rod B is a piston H, the adjustment of which is accomplished by means of threading the piston on to the rod. Interposed between the piston and the cylinder head is a buffer spring K, the size of which is entirely governed by the end tension desired on the leaf A of the spring. Each cylinder has an oil plug for the insertion of oil to serve as a lubricant and which also acts as a fluid brake, inasmuch as the cylinder is completely filled with oil. Upon the forward or backward movement of the piston the oil is forced from one side to the other through an aperture N which gives a definite resistence to the moving piston. The piston rod B for each cylinder extends beyond the piston head, where it carries a slot R for receiving the end of the leaf of the spring A, a bolt forming the union. In this way the center or main leaf of the spring is secured solidly to the piston. As the end of the spring falls or rises, due to the unevenness of the road, the cylinder, C being pivoted at E, adapts itself to this angle, so the spring always pulls direct on the piston rod B. Nearer the center of the spring, where it is carried on the axle, are vertical guides S, in which roller bearings are journaled at both ends, one of these rollers bearing upon the top leaf and the other the bottom leaf of the spring. When the spring is deflected there is a movement of the leaves either forward or backward, longitudinally of the main frame with the leaves aligned.



THE BURGESS SPRING SHACKLES THROUGH A PISTON AND CYLINDER

CURRENT MOTOR CAR PATENTS



ALLOATTI'S TIRE — HELDMAN'S MOBILE RIM — AVERY'S TREAD

Mechanical Carbureter—No. 864,111, dated Aug. 20; to F. W. Sickles, Hartford, Conn.—The spraying nozzle is inclosed in a small-diameter tubing. Outside of this tubing is the upper passage for the air, so the latter does not come in direct contact with the gasoline as it escapes from the nozzle. To facilitate and insure the proper mixing of the air and gasoline, a horizontal chamber is arranged above the spraying nozzle and in this chamber is a fan device, rotated mechanically from the engine. This fan is intended to break up the particles of gasoline irrespective of the speed at which the motor is running and so give a better mixture.

Carbureter Governor—No. 863,916, dated Aug. 20; to J. Grouvelle and H. Arquembourg, Paris, Fr.—In the carbureter arrangement referred to a throttle is provided for controlling the passage of the mixture to the cylinders. In conjunction with the carbureter is a diaphragm and diaphragm chamber, the latter connected by tube with the intake pipe of the engine, so the engine suction will produce a partial vacuum in this chamber. Connection is also furnished between the diaphragm and the throttle whereby the movement of the diaphragm regulates the throttle. Additional means are provided for admitting air to the diaphragm chamber at the will of the operator, this air being for the regulation of the pressure on the diaphragm.

Removable Rim—No. 863,848, dated Aug. 20; to A. Heldman, New York City—The main rim is carried on the wheel spokes and an auxiliary rim for fitting over it carries the tire. Both rims are tapered towards the wheel's axis and outwardly flaring fasteners, arranged to straddle the main rim and to embrace the auxiliary rim, are used. Means are provided for pressing the fasteners outward as well as for connecting the two rims.

Segmental Tire—No. 863,827, dated Aug. 20; to J. Alloatti, Gerzat, Fr.—This tire consists of a series of short pistons arranged radially and in transverse rows. The outer ends of these pistons form the tire of the wheel. Each piston operates in a socket in the wheel rim and is pressed outward by a coil spring.

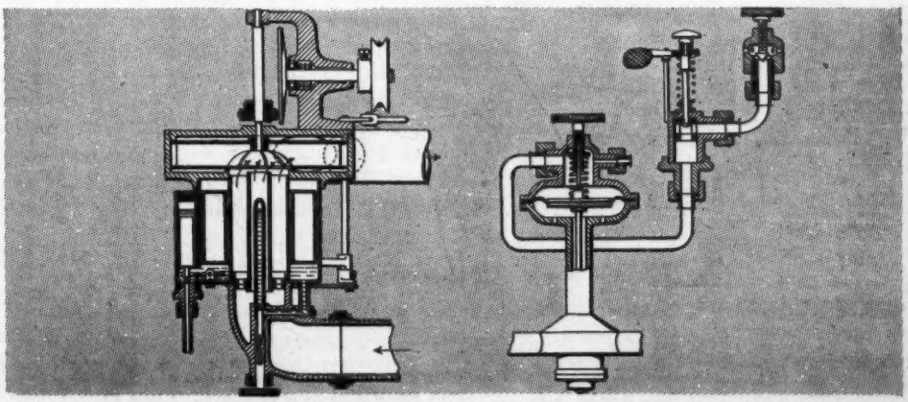
Reinforced Tire Tread—No. 863,689, dated Aug. 20; to H. W. Avery and W. S. Judd, Cleveland, O.—Embedded in the tread portion of the tire casing is a crescent-shaped strip of sheet metal conforming in curvature to the tire casing. This sheet of metal is wound with tape, the edges of the winding overlapping, and is further covered with a tubular shield vulcanized into the rubber forming the outer casing of the tire.

Pneumatic Shock Absorbers — No. 864,141, dated Aug. 20; to T. F. Scott, Everett, Mass.—At each corner of the frame is carried a cylinder in which operates a piston connected with the car axle. The cylinder is mounted so it can swing in a vertical longitudinal plane and the piston connects with the axle so it can oscillate in the same plane. In the center of the car is an air tank filled with air under pressure and which connects with the cylinders of each of the four corners of the frame. Control arrangements are provided whereby any desired air pressure can be admitted into the cylinders and the amount of vibration absorbed varied.

Double-Acting Motor — No. 864,086, dated Aug. 20; to H. A. W. Drechsler, Mannedorf, Switzerland—In the cylinder of the motor is one long hollow piston and explosions take place at each end of it, the piston rod being rigid in the piston and passing out through one end of the cylinder through a packing box. Outside of the cylinder an immediate shaft is used to connect with the throw of the crankshaft. Gas is admitted direct into one end of the cylinder by means of ports uncovered by the piston. Mixture enters the other end by way of the hollow piston, the exit passage from which is controlled by an automatic valve.

Mezger's Spark Plug—No. 864,135, dated Aug. 20; to C. A. Mezger, New York city—The insulation in this spark plug is made with a central expanded part which rests upon a collar in the plug casing. Holding the insulation in position is a bushing which screws into the top of the plug casing. Between this bushing and the insulation is a washer of relatively soft material, which, under the pressure of the bushing, forms a gasket in the plug.

Maxwell Gearset—No. 864,015, dated Aug. 20; to J. D. Maxwell, Tarrytown, N. Y.—This patent refers to the sliding gearset and gearset control on Maxwell touring cars as used at present. The patent includes a casing, part of which forms the crankcase, another portion a chamber for the clutch and a third a casing for the gears of the gearset. The design is compact and the entire plant is located on a three-point suspension on the frame.



SICKEL'S MECHANICAL CARBURETER — GROUVELLE'S CARBURETER GOVERNOR

SOME TRENDS OF MODERN AUTOMOBILE DESIGN*

By Victor Lougheed

PART V

THE RECENT performance of an Oldsmobile in traversing a considerable distance over very hilly roads with the high gear sealed in engagement, taken in connection with the earlier feat of a Napier in running 1,000 miles under similar conditions, besides a number of other tests that have received less publicity, and the practice common among users of high-grade cars of doing practically all of their running on the highest speed, combine to suggest that the gearless car is not so remote as some people believe it—at least for cars of pleasure types, in which the power available even with present engines is high enough in proportion to vehicle weight to assume high-gear running under practically all conditions. Motorcycles, tricars and quads, many of which are in use and most of which are built without gear changes, also go far to prove the contention that a not unreasonable amount of overpowering can be sufficient to avoid the necessity for gears.

Torque range and impulse frequency rather than mere high power are the real prerequisites to gearlessness, though overpowering is perhaps the most available method for securing these essential conditions. It is not a greater power in the steam engine that makes it so superior to the gasoline engine in flexibility; it is the fact that at all speeds and at all points in the stroke pressure is constantly maintained on the piston head. Accordingly, any means of keeping up the pressure on the piston of a gasoline engine, at low speeds as well as at high, must be a great step towards the gearless car. Available traction and not power is the real limiting factor in motor-car propulsion, and it is not difficult to find the fallacy in the common argument that to be successfully gearless a car must be indefinitely or hopelessly overpowered. It is obvious of course that the power demand on the road is an exceptionally fluctuating power demand, since there must be uphill, downhill and level running at widely varying speeds and not always with the same load. But the contact between the driving wheels and the road under any given car can be regarded as closely comparable to a friction drive, capable at any given speed of transmitting only so much power, which amount is the limit of what can be used, no matter how much may be available. A simple test will illustrate. Place any motor-car upon a level surface and tie a rope from the rear of it to some stout and fixed object, interposing a heavy spring balance at some point in the connection. Then start the car very gradually on the low gear and observe the draw-bar pull, to borrow an expression from railway engineering, at the moment the wheels commence to slip. In cars subjected to this test by the writer the pull has varied from 100 to 500 pounds, according to the total weight, the nature of the tire treads and road surfaces, etc., but a fair average, with a hard, dry road, rubber treads and from 1,200 to 1,500 pounds on the drivers, is 375 pounds. This being the case, assume that a weight of 375 pounds is substituted for the spring balance and arranged so that the motion of the car can hoist it out of a deep well at any desired rate of speed. Does it not follow that the power capable of being used, since any greater load than 375 pounds will cause the wheels to slip, can be measured definitely by the speed of travel? Thus if the car travel at the rate of 1 mile an hour it will be lifting 375 pounds 88 feet high in 1 minute—the exact equivalent of 1 horsepower; and if it goes 40 miles an hour it will be developing and using 40 horsepower.

Motor Car of the Future May Be Gearless and Clutchless

This manner of reasoning must always hold right, regardless of the nature of the resistances to be overcome. Whether it is air resistance, frictional losses within the tire or between it and the road surface, or the work of taking the car up a grade, the facts always remain that a greater traction than gives 375 pounds' pull will cause the wheels to slip and that without such greater traction no more power can be utilized than 375×speed in feet per minute÷33,000=horsepower. Of course it is not to be assumed that 375 pounds' draw-bar pull will in all cases be the proper expression of the coefficient of traction, but it is at least a liberal and a likely figure. In many cases the pull will be much less, because of lighter weight, inclined position of the car on grades, wet road surfaces, intermittent road contact because of the bouncing from fast running, etc. On the other hand 500 pounds probably is away above the limit, unless for heavy commercial vehicles, non-skidding tires, etc. The diagram given in figure 38 shows at a glance the limit of power that can be utilized at any given speed, with tractive efficiencies equivalent to the figures appended to the different diagonal lines.

From this it will be clear that it does not take nearly so great a power to slip the wheels at any given speed as is often supposed, and that the necessity for the change-speed gear arises not from a prodigous tractive requirement, but from a most marked inability of gasoline engines to pull at low speeds. The reason of this is not far to seek. A motor to meet the severe demands of motor-car propulsion without the aid of a change-speed gear must be flexible enough not only to afford the speed range necessary, but at the same time must maintain some measure of its full torque to both ends of the range and especially to the lower end. These qualities both steam and electric motors possess in high degree, but the ordinary internal-combustion engine falls so far short of them as to make recourse to the change-speed gear almost imperative under present conditions.

The causes of this difference are easily brought out by a little elementary reasoning, based upon the nature of horsepower. One horsepower being the ability to do work at the rate of 33,000 pounds lifted 1 foot high in a minute, it follows that in an engine developing 30 horsepower at 600 working strokes a minute the power developed by the mean effective pressure during each working stroke must be that requisite to raise 33,000×30÷600, or 1,650 pounds 1 foot high. With a steam engine of the given size, working with unvaried cutoff and with port and throttle openings such as to prevent appreciable wiredrawing, this figure of work per stroke will remain substantially constant at all speeds from one

EDITOR'S NOTE—This is the fifth and last of a series of articles on "Some Trends of Modern Automobile Construction" by Victor Lougheed.

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infinitely slow up to the maximum and any variation in speed will vary the power in direct proportion. Thus by speeding from the 600 to 1,200 working strokes a minute the power output will become 1,200×1,650 ÷33,000, or 60 horsepower, while, conversely, slowing to 100 working strokes a minute will drop the power output to 100×1,650÷33,000, or 5 horsepower.

With an ordinary motor-car engine the condition is not at all similar. In such an engine the variations in speed have a pronounced effect upon the functioning, so that there is one speed of highest efficiency, from which all variations change not alone the number of working strokes in a given time but also the power value of each working stroke. For example, if an internal-combustion engine can lift 1,650 pounds with each working stroke at a rotational speed involving 600 working strokes a minute it will develop 30 horsepower, as in the case of the steam engine previously considered; but if it is speeded up to 1,200 working stropes a minute the power to the stroke will drop, say, to 1,000 pounds, because of the wiredrawing and attenuation of the charges, with the consequence that 1,200×1,000÷33,000, or 36 12/33, will be the horsepower, instead of the 60 horsepower that is developed by the similar steam engine. Moreover it is worthy of note that though the high speed does not give a higher total power it does so despite a reduced turning effort on the shaft.

Even more serious is the condition upon showing. Assume that the speed of 600 strokes be cut to 150, and it is safe to assume also that the power to the stroke will be cut to 800 pounds, because of the slower expansion, heated incoming charges, loss of heat to the cylinder walls, etc. So 150×800÷33,000, or 3 7/11, will represent the power, against 150×1,650 ÷33,000, or 7½ horsepower, in the case of the similar steam engine.

Another respect in which internal-combustion engines differ from steam lies in the capacity for minimum speed which in one case is determined chiefly by the frequency of impulses and the momentum of rotating parts, while in the other it may be as slow as the motive fluid can be fed into the cylinder. Probably fifty revolutions a minute is as slow as it ever will be practical to run an internal-combustion engine, without altogether prohibitive cylinder multiplication, and to achieve this speed while at the same time maintaining any sort of torque will be very great progress indeed.

It is this feature of minimum speed that calls for the clutch in starting a car propelled by a gasoline engine. The engine, having no capacity for load at exceedingly low speeds, must be speeded up until it has both power and momentum to throw against the load, which is gradually applied through the medium of a clutch that permits slipping. Right here, too, there comes in a special necessity for the change-speed gear in that it prevents stalling of the motor not only by permitting an increase in its speed but by reducing the leverage against it. Clearly, though, here is a condition that does not need any immense amount of remedying, in the way of overpowering and extension of torque range, to permit invariably starting on the high gear, as is not at all difficult now with many high-powered cars fitted with clutches that will stand a lot of slipping.

Already there is on the market one well-known car—the six-cylinder Ford—with a two-speed planetary gear in which the high gear represents a ratio of engine speed only double that provided on the low gear; and for some time the Napier people have stood committed to a policy of building their six-cylinder cars to special order with no gear but the reverse. Certainly it must be conceded that with its high gear out of commission the Ford six is a gearless car, capable of at least half its present maximum speed and no more subject to stalling than the average car. This, moreover, is with an engine rated at only 40 horsepower, propelling a heavy vehicle, and little if any more flexible than other six-cylinder motors of the current type.

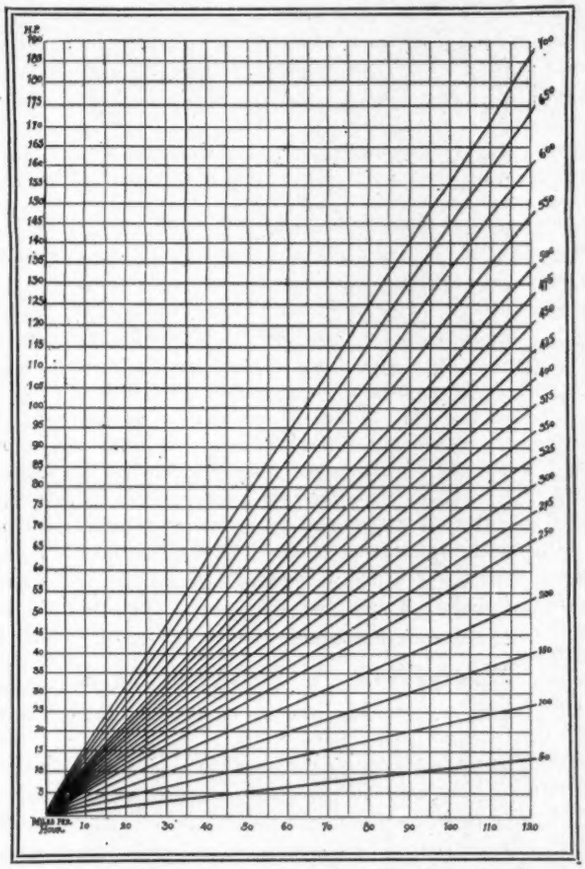


FIGURE 38—HORSEPOWER THAT CAN BE APPLIED UNDER VARIOUS CONDITIONS OF TRACTIVE ADHERENCE

The sum of the evidence according to the foregoing seems to be that even the plan of overpowering with present engines affords a measurable prospect of satisfactory gearless constructions, in which case lighter motors with better-maintained torque will assure the gearless car in a not at all remote future, by which time the average car will have an engine capable of slipping the driving wheels on the ground at all speeds.

Stalling of gear cars, it is to be borne in mind during any consideration of this subject, is not uncommon, so the stalling of a gearless car under sufficiently strenuous conditions would not necessarily prove it to be any less serviceable than the present type. A pair of small-diameter driving wheels sunk to the hubs in sand or mud will stall any car, whether or not it has gears, and recourse to excess power or an excessively low gear will simply result in slipping the wheels or in breakage of some portion of the propelling mechanism. Thus is it further proved that the useful effect is based only secondarily on the limit of power that can be provided, and rests primarily on the limit of traction that can be had. The cure for deep sand and mud, if any cure for these exists, is probably to be found in the direction of lighter weights and larger wheels than are common just at the present time.

Multicylinder constructions are likely to develop about in accordance with the division of two-cycle and four-cycle engines on motor cars of the future; also, the practicability of eliminating the change-speed gear will have an undoubted bearing in this direction. The objections to extreme cylinder multiplication, except from the single standpoint of manufacturing cost, are less real than many suppose, for the provision of many cylinders really constitutes duplication rather than complication and may be fully justified by its effect in extending the torque range and reducing and smoothing loads upon the transmission. If by the use of eight or even twelve-cylinder engines it should become possible to do away with the flywheel, change-speed gear, starting appliances, etc., surely the use of so many would become well warranted.

Of course it is first desirable to try out every possible means of multiplying the impulses within a given number of cylinders before multiplying the number of cylinders. This consideration makes it certain that the two-cycle engine will be the engine of the future if it can be brought to anything like four-cycle dependability. It is even possible that two-cycle engines of the double-acting types illustrated in figures 36 and 37 may find some application, because they will cheapen crankshafts, while at the same time maintaining frequency of impulses and evenness of torque. A one-throw crankshaft with such an engine would give every result that is afforded by present four-throw crankshafts, which are virtually one-throw constructions

in the sense that all cranks are in the same plane and either adjacent to or opposite one another.

Reversing is a function that certainly belongs in the engine rather than to a change-speed gear, if steam engine and two-cycle practice counts for anything. If internal-combustion engines generally can be made to reverse without any more complicated reversing mechanism than is required for steam engines there can then remain no more reason for reversing gears than there is today for reversing gears on an electric motor or steam engine.

Necessity for the Clutch

However probable it may seem that the change-speed gear is to fall into disuse, there is little likelihood of the elimination of the clutch, which is practically certain to be retained even on gearless cars. The one hope of doing away with it is found in the fact that, with everything else planned just right and working just right, the amount of slip required need never exceed a few turns. This might make it appear remotely feasible to substitute for the clutch some heavy coil-spring arrangement that would permit the engine to make some certain number of turns before taking up the load, which would come on gradually as the springs tightened.

The braking systems in vogue on even the best modern cars will stand considerable improvement. Efficient enough for all ordinary uses, practically all of them wear with excessive rapidity when subjected to the work of prolonged coasting. It is not as widely understood as it might be that the dissipation of the great energy developed in rapidly dropping a considerable weight from a higher to a lower level is a problem requiring excellently designed mechanism to solve it. Certainly it can hardly continue to be regarded as sufficient to convert the work into heat and expend the heat in burning up brake facings and in blistering the paint on brake drums. Cooling brakes by a water drip is the rather unmechanical but fairly successful expedient employed on some high-grade cars, but a better idea might be that of clutching in the resistance of a specially designed air compressor, with a flanged cylinder and a controllable valve action, against the rotation of some transmission element. Something of this sort is suggested in the present method of throttling and cutting out the ignition during the descent of long grades, so that the car drives the engine.

Differential and Its Use

Another point of weakness, which nevertheless offers little hope of improvement, is the differential of the present-day car. This device has the bad defect of equalizing for resistances, whereas what it really should do is to equalize for distances. Under the majority of conditions, fortunately, the one thing is synonymous with the other, but in going over an unequally wetted surface, for instance, with one driving wheel on a slippery place and the other on a dry place, the one on the slippery spot will be allowed by the differential to spin, while the other holds the road. This phenomenon often gives rise to most disconcerting skids and shows very lucidly wherein the differential falls short of being an ideal device for its purpose.

Practically the only possible substitute for the differential, unless a separate motor be used for each driving wheel, as in the case of electric cars, is a releasing clutch or ratchet of some kind whereby the outer wheel on curves is permitted to run free, the whole drive being taken on the inner wheel. This is not nearly so bad a plan as might at first appear, except for the complication it involves to allow reversing, for one wheel is given the same amount of work as the other by virtue of the fact that average running will involve as many turns in one direction as in the other. And even a differential does not divide the power equally between the two wheels on curves, the wheel turning the faster naturally applying the greater proportion of the horsepower.

The extreme difference in distance that can be traversed by the two wheels in making a complete circle is double the tread X 3.1416, or 352.85 inches in the case of a car with 56-inch tread. This would require a slippage of one or both tires equal to from three-quarters to one wheel revolution to equalize the motion in making a right-angled turn without a differential. Whether this variation can be better accommodated by some sort of slipping or releasing clutch than by the modern differential, it remains for the future to show. It at least can be said that the shortcomings of the differential are sufficient to make the field of its modification or practical elimination a most interesting one for invention.

The ideal car—the car of the future—will, in the writer's opinion, show many departures from present constructions. Good as the present car is, it is too much to believe that its many defects, both superficial and fundamental, shall persist indefinitely. Some day—though objectors may urge the undoubted possibility that he is a poor prophet—the writer confidently expects to go to one of the great annual shows of the industry and see there in quantity what today he ventures, for the want of a better term, to call the car of the future. And as this car is mentally pictured, irresistibly it seems to appear, with the force not of a mere conclusion but of a positive conviction, that it lacks the starting crank, which no one can approve or defend; that it lacks both the carbureter and spark ignition, a twinship of mechanical evil which are now tolerated rather than approved; that it has no water pump, nor radiator, nor water jackets, nor cooling ribs, nor flanges, nor pins, nor muffler; that it will run on alcohol, kerosene, gasoline, or even crude petroleum with an efficiency not dreamed of by present-day promoters of economy tests, and that it will reverse as readily as it will self-start. Also, it seems possible that it will have no change-speed gear, which with the other discarded elements will serve a better future purpose by reposing in the limbo of things forgotten, along with the hot tube, the tubular frame, the automatic inlet valve and the underhung radiator. And it may be, furthermore, that it will have neither clutch nor flywheel, or that these will be modified into less complicated and weighty elements than they constitute at the present time.

Very probably the car of the future will have strong and inexpensive though peculiar-appearing disk wheels of a diameter in no case smaller than 36 inches, and the pneumatic tires, though likely to be similar to present tires, will be carried inflated on removable rims and may be made of cheap synthetical rubber. Annular ball bearings are likely to be used throughout, unless possibly on the ends of the connecting rods. And, of course, no materials but the finest of alloy steels will be used for the running gear and other parts that sustain shocks, while pneumatic upholstery will prove light and serviceable.

Last but not least the car of the future will be run on good roads, and will be made in such quantities and of such low weight and great strength as to assure low first cost and low maintenance expense. Then true simplicity will lead to real reliability, and the man in the street will have to become neither a millionaire nor a mechanical veterinary to be able infallibly to get there and back with his trustworthy steed of steel.

MAKING A NEW JACK

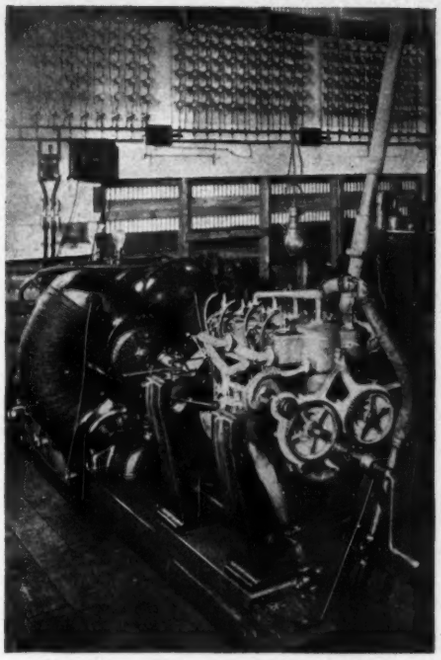
A. J. Becker, who is connected with L. Glesenkamp Sons & Co., of Pittsburg, will put on the market a device for use in garages that is likely to be a fast seller. It is a jack, and the device consists of a steel rod at the side of the machine in which runs a telescopic rod. Attached to this rod are four shoulders, one under each hub. A crank or lever in front of the car furnishes the power which by means of a spiral or screw brings the car up to a height of 4 inches almost instantly, all the wheels coming off the floor at once. Ball-bearing casters support the shoulders and these enable one man to move about with ease a machine weighing 5,000 pounds, it is said. There will be no holding power at the center rod, but this will be concentrated at the side rods on each of which there will be an adjustable device. Aside from saving a large amount of labor in moving about a garage the jack will, it is claimed, save at least 25 per cent of the wear and tear on tires. The Becker jack will elevate the car wheels as soon as the machine is in the garage, thus getting it ready for cleaning.

PREMIER MOTOR TESTING PLANT

EVERY MAKER to his own way of thinking and the Premier Motor Mfg. Co. to its when it comes to testing the horsepower and general efficiency of its motors before mounting them in the cars. Here is how this company does it at its factory in Indianapolis: After the motor is assembled it passes to the motor testing department of the factory—a goodly sized room in which a number of motors are mounted on blocks and given a preparatory run under belt power for lapping the cylinders and working down the pistons as well as cylinder walls to a glass finish. The line shaft shown along the ceiling of this testing room in the illustration on the bottom of this page is in turn driven by a motor which has been transferred from the lapping block and runs by its own power at this work. This limbers it up well and subjects it to its first actual work, it being kept running for several hours. During this service all water connections, intake and exhaust manifold connections are inspected and the timing of the valves proven.

Later this motor, after it has successfully met the requirements, is transferred to another block, another motor from a lapping block taking its place. On the last testing block the record of the motor is taken to ascertain whether or not it develops the requisite horsepower. To do this it is coupled to a dynamo and takes an electric pull for 2 or 3 hours, the load running to 32 horsepower which the motor must pull, although it is rated at but 24 horsepower. The electric load is a bank of light, forming the background and covering the wall in the small illustration.

This testing room is in the hands of men who have a practical knowledge of the motor and have had a long experience as road testers. Their work, besides getting the necessary brake test, consists in



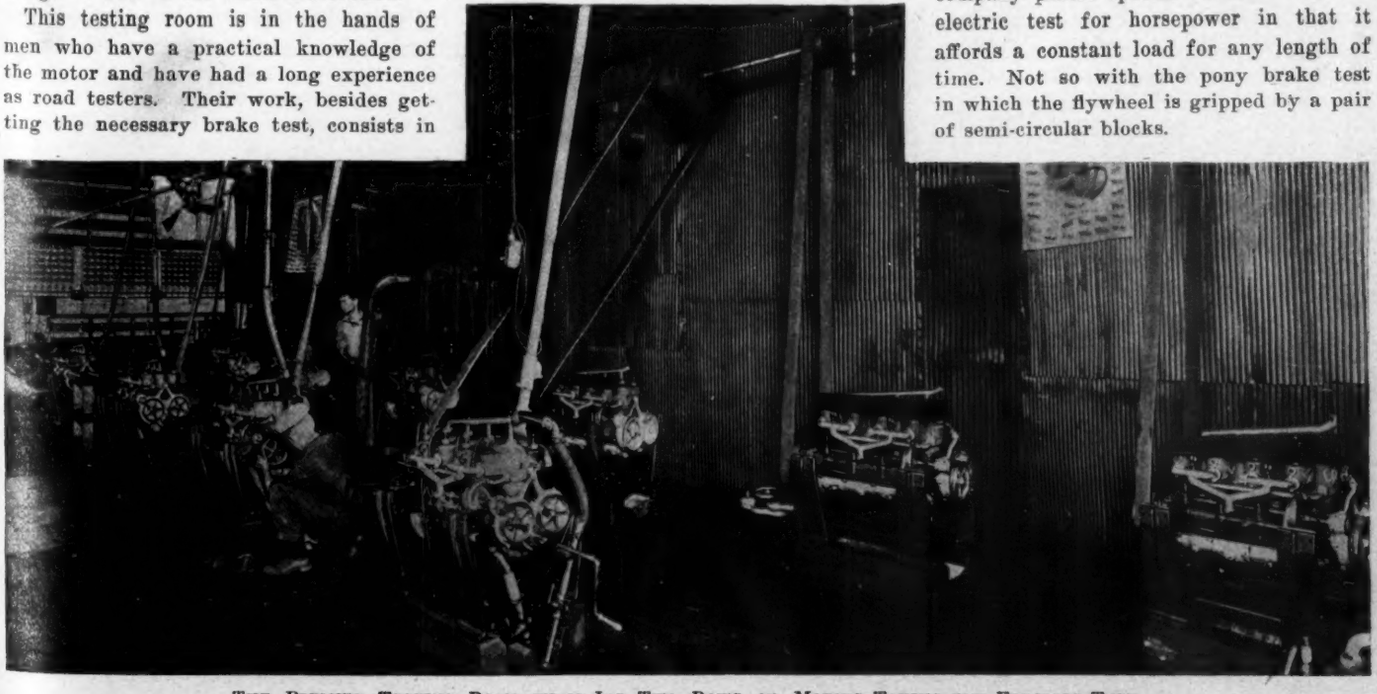
MOTOR YOKED TO ELECTRIC GENERATOR

getting the motor to run smoothly. In doing this half-time and pump gears are inspected while the motor is running and imperfections are rectified by hand fitting or supplying new parts. Each water pump is tried out to make sure that at a given speed it will sustain a column of water of a given height. Carbureters are adjusted to give a good mixture at all speeds and with all loads.

Once the motor has successfully passed its testing room examination it is given a certificate of good performance and goes to the assembling department, where it takes its place in the car chassis. These chassis are first equipped with testing wheels and bodies for road testing which consists of not less than a 100-mile run and at times 250 miles. This constitutes the first real workout of the car and during the test the entire machine is passed upon—the adjustment of the clutch, condition of the gearset, the rear axle, steering gear, and every detail. After this an official inspector gives the car an inspection run and places the firm's mark of approval or disapproval upon it. This double checking system — first by the regular road tester, then by the official inspector—is designed to insure every detail of the car being right before it passes beyond the confines of the factory. Lastly, it gets its serial number, is run into the paint shop and later finds its way to the shipping station, where it takes its place in the freight car—off for the buyer.

The testing room is capacious enough to accommodate a dozen motors and is designed so the motors under test are in two rows from end to end with aisle width between them through which a motor can be pushed on its truck. The truck has a crane arm and block and tackle arrangements so one man can unload it and hoist it onto its testing block. Water connections for the jacket rise through the floor of the room adjacent to the ends of the testing blocks and arrangements are such that but a little time is needed in mounting or dismounting the motors.

Like many other makers the Premier company places special confidence on the electric test for horsepower in that it affords a constant load for any length of time. Not so with the pony brake test in which the flywheel is gripped by a pair of semi-circular blocks.



THE PREMIER TESTING ROOM WITH ITS TWO ROWS OF MOTORS TAKING THE ELECTRIC TEST

THE READERS' CLEARING HOUSE

QUESTIONS IN STEAM PRACTICE

Sacramento, Cal.—Editor Motor Age—Will you kindly furnish a reader with the following information as far as your knowledge will direct:

1—Regarding the high-pressure piston valve used in the 1907 White steamer. Does this valve give any trouble above the average, as to leakage, not wearing cages straight and breakage of rings? If its use is attendant with success at this high pressure used in the high-pressure valve chest and with its high superheat, why is it not used in the low-pressure valve? If it is a success, its use in both valve chambers would certainly repay in lack of wear on valve gear and a much more uniform steam distribution due to less distortion of valve gear, in turn due to less friction of valve. These questions have been asked the White company, but you know just as well as I do that the chief defects of a certain mechanism will not be discussed by a manufacturer. With very special attention paid to as perfect lubrication as it is possible to obtain with the very best of oils, together with special attention paid to softening the cylinder casting valve seat and valves as much as possible, do you not believe that the plain D slide valve for use with high pressures and high steam temperatures would give the satisfaction attendant with its use with the least amount of trouble? The usual argument with piston valve users for compound engines is that whatever leaks by the piston valve is stopped by the slide valve of the low-pressure engine. This is good argument for some people who do not know good practice, but it doesn't go with me. Each cylinder is properly designed for doing an apportioned amount of work and any disarrangement through leakage spoils the whole plan. If the piston valves leak badly after a little use they are very unsatisfactory and will not be considered by me.

2—External or internal brakes. In your estimation which is most satisfactory? With exceptionally large brake drums, considerably larger than those in use at present, would not the internal expanding brake give good satisfaction if properly housed in from the mud, dirt and water?

3—Regarding double side chain drive. Would not a side chain drive give better satisfaction in a high-powered steam car than is usual with a higher powered gas car? The stretching of chains due to starting a car and changing gears is not present in a steam car.

4—Phosphor bronze crankcase. Would not a phosphor bronze crankcase substituted for the aluminum crankcase on the White engine allow a considerably stronger framing for the engine with a slight increase in weight? What, in your opinion, would be its chief drawbacks?

5—Design of crankcase. Does it make any particular difference which way the crankcase is split, as regards crankshaft bearings, whether vertically or horizontally, in a horizontal motor?

6—Thermostatic indicator. Is there any thermostatic indicator made for registering on a figured dial the high temperatures of steam? For instance, can one be applied to a White steamer? Would it be possible to add multiplying levers to a thermostat for indicating temperatures in degrees Fahrenheit?

7—Control of water discharge from a water pump of the White. Would it be possible to substitute an exceptionally large pump, having a big surplus, and then tapping the discharge pipe from the pump to the generator and placing a needle valve controlling the amount of water to be returned to the water tank or by-pass by the degree of opening of the needle valve? If so, would not the big surplus pump allow of better adjustment than one having a small surplus, as a greater radius of action can be used on the needle valve without unduly affecting the water supply? A small opening of the needle valve would affect the small pump considerably and it would be a very delicate matter to change the adjustment with any degree of certainty.

8—Balanced fuel and water. Do you not believe that a fuel and water system whose fire and water feed are balanced and aportioned so as to produce pressure desired with the same steam temperatures is far more economical in a flash boiler than the combination of an intermittent fire and a big intermittent water feed both operated by automatic devices that require a variation of twenty to forty pounds pressure or 50 degrees of heat for their alternations? These questions have been made as clear as I can give them and are asked by a searcher after information.—W. R. Harlan.

1—Motor Age does not make it a practice to pass opinions on merit and therefore cannot answer this question.

2—Internal brakes are probably better if thoroughly protected from oil and dirt, but this is sometimes a troublesome problem. With certain designs of rear axle there is a tendency for oil to work out from the axle bearings into the brake drums. The external brake is simpler, but is perhaps a little more apt to drag.

3—There will be very little to choose between a gasoline and a steam car with regard to wearing qualities of side chains. The strain on the chains due to the clutch of the gasoline car taking hold quickly is offset by the more rapid acceleration of the steam car when the throttle is quickly opened.

4—Phosphor bronze is a bearing metal and is entirely unsuited for structural use. You are probably thinking of manganese bronze, which is frequently used for engine frames, crankcases and the like.

5—Any bearings ought to be split as nearly as possible at right angles to the direction of the load, so they can be refitted by scraping and taking up when worn.

6—There is nothing mechanically impossible about making such a thermostatic indicator as proposed. Motor Age does not know any such now on the market for this special purpose.

7—There are several practical objections to the substitution of needle valve regulation of the by-pass for the customary on-and-off or quick-acting valve. One of these is that no needle valve of ordinary dimensions would, when fully open, permit the passage of such a volume of water as it apparently proposed. Another is that when the valve is slightly open the difference in water pressure between its entering and outward sides is necessarily equal to the full steam pressure in the generator. This implies a small opening and intense velocity of the water passing through the valve, which would soon score the valve seat and cause it to leak badly. This would be true even with perfectly clean water, which, of course, is impossible to procure. A further objection is that the water pressure against the valve itself would exert a disturbing influence on the action of the diaphragm regulator unless the valve were balanced in some way. This involves complication in construction and possibly stuffing boxes.

8—The inquirer does not state whether he has in mind an automatic or manual control for the proposed balanced fuel and water system. There is no difficulty in regulating such a system by hand, but it compels the driver to anticipate every change in steam consumption by modifying his fuel and water feed shortly before such change actually occurs. Otherwise he finds himself with too much or too little steam to drive the car. If an automatic system is in mind it must be remembered that the working out of such a system in detail to secure absolute reliability and uniform action under all conditions is a matter of extreme difficulty and has been unsuccessfully tried a good many times. It is evident that any such system of automatic control requires a large excess of burner and pump capacity to avoid loss of pressure on a sudden demand for steam, as when climbing a hill.

LEGAL LIGHTS AND SIDE LIGHTS

INTERESTING LEGAL LIGHTS

President William H. Hotchkiss of the American Automobile Association last week attended at Portland, Me., the session of the congress on uniform laws, which is made up of the commissioners appointed by the governors of the different states and which meets each year with the American Bar Association. Charles Thaddeus Terry, chairman of the legislative board of the American Automobile Association, is one of the three commissioners from New York state, and very recently Governor Hughes appointed Mr. Hotchkiss to fill a vacancy. Although motor laws did not receive thorough attention at this session it is ascertained that the congress ultimately will give a vast amount of consideration to this subject. Uniformity in motor vehicle laws can best be obtained through such bodies as this congress. The members of the legislative board have for some time past been preparing the draft of a model motor vehicle bill to be presented to the congress on uniform laws to the end that the same subsequently may be introduced in the various state legislatures. It was impossible for Chairman Terry to place in its final and approved form the uniform state motor vehicle law —though it practically has been agreed upon by the legislative board—so that it could be discussed at the present meeting. Every effort is being made to facilitate the work as far as possible and copies of the proposed law will be sent to all members of the legislative board with the request that, providing the legislative situation is such as to make it feasible, the bill may be introduced into the legislatures of their states and the efforts of members of the American Automobile Association be put forward to secure its passage by the solons.

WILL HAVE A COMMISSION

Milwaukee will have a motor commission, an ordinance creating it having been introduced. The commission will be composed of three members—an electrical engineer, a practical machinist, and the secretary of the civil service board. All drivers of motor cars in the city will be compelled to secure licenses and upon just cause the commission will have the right to revoke such licenses. A feature of the ordinance is the provision for the action to be taken against intoxicated chauffeurs. The commission will have the right to revoke the license of a chauffeur who has been convicted in court of drunkenness. According to the ordinance: "Said commission shall have full power and authority to hold and conduct examinations of all applicants for licenses hereunder, which said examinations shall be held at such times and places as they shall appoint from time to time. They shall adopt such rules as they shall see fit for the conduct of such examinations, and may alter, amend or repeal the same at will. Each commissioner shall be allowed a compensation of $10 per day for each and every day by him actually and necessarily spent in the discharge of the duties hereby created; the same shall be paid from the fund and in the manner herein provided for, but he shall be allowed no other fees, compensation or emoluments. A chauffeur, as the term is used in this ordinance, shall be held to mean every person employed to run, or engaged in running, a motor car. No person shall run or operate a motor car within the corporate limits of the city of Milwaukee unless said person is 21 years of age and shall have first procured a license so to do in the manner herein provided. Every person desiring to procure a license pursuant hereto shall make written application to said commission upon blanks to be provided by said commission, which such blanks shall be in the form prescribed by said rules, and at the time of filing said application the applicant shall deposit with the commission the sum of $5, which shall be the application fee for such license, and the same shall be paid into and become a part of the fund and shall be disbursed and expended in the manner hereinafter mentioned. Every person making application for license hereunder shall be given at least 48 hours' notice in writing of the time and place of the next examination, which said notice shall be given by said commission by mail to the postoffice address of the applicant shown in his application. Every applicant shall appear at the time and place fixed in said notice for examination and shall then and there be examined by said commission orally or in writing, or by both oral and written examinations, concerning his qualifications and ability to properly and safely run and operate a motor car or motor cars pursuant to the rules of said commission. Said commission shall examine all applicants for license by oral or written, or by both oral and written examinations, and ascertain whether each applicant is qualified and able and possesses sufficient knowledge and skill to properly and safely run and operate a motor car, but if any applicant shall be shown by such examination to possess sufficient skill, qualifications and ability to properly and safely run and operate only one or more particular kinds or make of motor cars he may be licensed to run and operate only such particular kind or make of motor car and the license to him shall so specify, and he shall not have the right or be permitted to run or operate any kind or make of motor car not so specified in his license as granted by the commission."

COMMISSION NOT POLICE BODY

Attorney General Malone, of Massachusetts, has handed down an opinion that says the state highway commission is not a police body. This greatly clears the atmosphere in Massachusetts on that question. The matter was brought up by some residents in various sections of the state who complained that the highway commission was not vigorous in enforcing the state speed laws. The commission declared its work was more executive than judicial, and that it was not up to the board to act except when cases were referred to it after convictions, such as revoking a license. To get a legal opinion the question was submitted to the attorney general. Here is the opinion that he handed down, and as a number of other states have copied the Massachusetts motor law practically word for word, it applies with equal interest to them: "I think it is not the duty of the commission to go about the state or send agents to investigate cases of unlawful or improper motoring of which they have knowledge. It is the duty of the local authorities or others to present the complaints to the commission, which shall, after due hearing, determine what disposition shall be made of them. I think the view of the commissioners in the matter is the correct one, as they are to pass upon such cases as are brought officially to their attention." Another point which the attorney general has settled for the commission relates to the admission at hearings of motor cases of affidavits bearing upon the case. Massachusetts is proud of its highway commission and motorists are glad to learn the commissioners do not have to do police duty.

GOOD WORK COUNTS

Pittsfield, Mass., is the latest town in the route of the giant Warner Auto-Meter to change its speed laws, increasing the limit to 15 miles an hour. This educational work on speed and the ridiculous limits placed on motorists by law in some communities is being carried on by the Warner people, who have built a giant Auto-Meter on the tonneau of a touring car and are going from city to city and town to town all over the country to show citizens just how slow 5 to 10 miles an hour really is; also by comparison how teams and street cars violate the law every day by exceeding the limits placed on motor cars. This giant Auto-Meter can be seen for blocks and the large figures showing just how fast and how far give citizens and officials an accurate idea of just what it means to be going from 1 to 5 or 10 to 30 or 40 miles an hour, although the dial on the regular Auto-Meter on the dashboard of a car tells speed up to 60 miles an hour and higher if desired.

FRANKLIN PARTY IN THE GARDEN OF THE GODS IN COLORADO

Police Traps Set—Buffalo motorists have been notified that they should be on the lookout for police traps while passing through North East, Pa. The police of that place are trying to arrest every driver, it is said, who goes through the town regardless of speed.

Militia Uses Cars—The advantage of the motor car for military purposes was shown at the recent field maneuvers of the Fourth brigade at Camp Hughes, near Buffalo. Brigadier-General Lauren W. Pettebone and staff of the brigade used daily throughout the week two Thomas Flyers. One of the cars was No. 9, driven by George Salzmann in the Glidden tour.

A. C. of P. Growing—At its last monthly meeting the Automobile Club of Philadelphia received an accession of thirty-three new members, bringing the total membership up to 475. The club's sign-post committee has everything prepared for marking the Philadelphia-Harrisburg road and the two main routes between the Quaker City and Trenton, and the signs, which will be finished this week, will all be in place by October 1.

Hartford to Have Climb—The Hartford Automobile Club has voted to hold a hill-climb and September 7 has been selected. A gymkhana is scheduled for a week later. The events number fourteen, all being classified according to price. Agitation favored piston displacement rules in view of the success of the Algonquin meet of the Chicago Motor Club, but the committee would not yield. There is to be a special class for steamers. The start will be made at the old wooden bridge on Albany and the climb will be about a mile up a gradual grade until the old Wadsworth tavern is reached. Here a sharp turn occurs, the finish being on the summit of Prospect avenue, the highest elevation in the city. Inasmuch as a staunch wooden fence is located at the turn on one side of the road and a barn on the other and the turn itself is very short some skillful driving is necessary. The chief feature of the meet will be a slow high gear event, that is, the slowest time on the high gear will decide the winner.

Fast Motor Cycle Time—The first race meet of the Philadelphia Motor Cycle Club was held at Point Breeze track on Saturday afternoon before a crowd of 2,500 people. Some fast time was made, notably the 6 minutes 2⅕ seconds for 5 miles of S. Kellogg's 3-horsepower Indian and the 33 minutes 36 seconds for 25 miles by Alex Klein's 3-horsepower Harley Davidson. The special mile time trial by Walter Goerke's 8-horsepower Indian was clocked at 1 minute 3 4/5 seconds—a second slower than the motor car track record.

Wildwood Again—Wildwood's Fourth of July motor carnival was so successful that the motor club of that thriving resort has promoted a similar affair which will continue throughout the whole of the week beginning Labor day, Monday, September 2. The affair will begin on Monday with a sealed bonnet non-motor stop run from Camden to Wildwood, which will continue till the contestants are gradually eliminated. This will also mark the beginning of the 6-day touring car contest, which will close on Saturday, September 7. All contesting cars in the sealed bonnet and touring car events will leave Wildwood each morning at 7 o'clock, returning in the evening. Official observers will accompany each car, and penalties will be given for all repairs and replacements, a cent a minute being charged for each man engaged in the work. The car having the smallest amount charged against it at the end of the week will be pronounced the winner. Each afternoon during the week there will be a series of short-distance races on the boulevard, with a special 5-mile road race on Wednesday morning. A special prize has been hung up for the steam or gasoline car that lowers the mile course record of 44 seconds, made on July 4.

Austin Dislikes Speed Limit—Because of the rigid enforcement of the speed laws it has been stated that the Austin Automobile Co. will remove from Grand Rapids to Detroit. The low speed law, it is claimed, prevents the company from properly demonstrating the speed of its cars.

Races for Pittsburg—Interest in the annual races held at Brunet's Island in the Ohio river below Pittsburg under the auspices of the Automobile Club of Pittsburg September 9 and 10 is growing rapidly and many entries were booked last week. Bruno Seibel and Barney Oldfield will race against each other. The race for 1908 models will be held on the second day of the meeting.

Glide Club Formed—The Glide Automobile Club, the membership being composed entirely of the owners and users of Glide cars, has been formed at Peoria, Ill. The club starts out with a charter membership of twenty-seven and officers were elected as follows: President, M. E. Magruder; vice-president, A. C. Berkstresser; secretary, A. Y. Bartholomew; treasurer, E. P. Churchill. The first club run will be made to Mossville for chicken supper on Saturday, the 31st.

Kent County Aroused—Through the efforts of the Grand Rapids, Mich., board of trade and the business men in general a call has been issued for a special session of the board of supervisors to consider the formation of a good roads district that Kent county may share in the apportionment of the money provided by the new state road law. The new law provides that the state will pay half the cost of road construction. This means that Kent county will have some of the best roads in Michigan.

Motor Car Proves Handy—Representing the Milwaukee chamber of commerce, B. G. Ellsworth, Charles F. Glavin and Emil Liesenberg have completed an 1,800-mile trip in a Rambler touring car over the grain belt tributary to the Milwaukee market. Speaking of the trip Mr. Ellsworth said: "The results of this trip prove conclusively the practicability of traveling and meeting trade by motor car. We traveled 1,800 miles in a Rambler car in 15 days. The trip we made and the work we did by ordinary methods of travel could not be accomplished in less than 6 weeks. We covered territory that could not be reached by any other means of conveyance. We traversed all kinds of narrow roads and met all kinds of teams and vehicles, but no accident or runaway of any kind resulted. It was amusing all along the road to note the attention paid to the big machine at every little town

we visited. The roads certainly are rough, and the hills are steep and high. The roads in Minnesota and Dakota we found to be naturally much better and kept in better repair than the roads in our own state of Wisconsin."

In Garden of the Gods—A photograph taken in the Garden of the Gods, Colo., shows E. C. Healey and family and Mr. J. H. Wilkins and party in their Franklin cars. They made a climb from Denver, Colo., to Colorado Springs and up to the Garden of the Gods. They traveled 160 miles, each car using but 7 gallons of gasoline.

City Will Appeal—Preparations for the appeal in the case brought by the city of Buffalo against Secretary Dai H. Lewis of the Automobile Club of Buffalo to determine the validity of the tax on motor cars in this city have been made by William S. Rann, assistant city attorney. Judge Hodson of the municipal court decided against the city and Mr. Rann is to conduct the city's appeal, which will go direct to the appellate division of the supreme court at Rochester, N. Y.

Hoosiers Wake Up—It is the intention of the Automobile Club of Indiana to arrange a number of events during the next 6 weeks. The season has been unusually quiet in that respect this summer but there seems to be an awakening in the sport. Early next month the annual hill-climbing contest will be pulled off. It is also desired to hold a 24-hour race and give several club runs, including a sealed bonnet contest. There was an effort a short time ago to consolidate this club and the Indiana Motor Club, but it is understood the negotiations are off.

Meet Date Changed—The Quaker City Motor Club has been compelled to again change the date of its race meet, this time to September 14. The action of the A. A. A. in granting a sanction for a meet in New York on the 7th necessitated this move. The Quakers expect to attract quite a number of New York entries, and their contest committe is nettled at the granting of a sanction which was bound to conflict with their races. They assert that the racing game has not yet been so firmly established as to warrant the promotion of meets on the same day in cities less than a hundred miles apart.

Christie Will Star—The Bay State A. A. is to have a race meet next Monday at Readville, Mass. As a chief feature of the meet Walter Christie is going to try for the mile record on the Readville track with the front-drive racing car that he used in the grand prix. In addition to the Christie event there will be another race that promises to attract much attention. It is a stripped chassis contest for stock cars. This event is free-for-all irrespective of power. Efforts have been made to get Walter White to enter his steamer. The six-cylinder Stearns is expected to be in the event. There will also be a race for touring cars at 20 miles and one for runabouts at the same distance. These are for gasoline cars only. Another race for steamers at 10 miles will be put on and a 5-mile event for cars built previous to 1905 will be contested.

Dunkirk Dons War Paint—Motor car drivers have been warned to live up to the 8 miles an hour speed limit in Dunkirk, N. Y., and vicinity if they wish to avoid arrest. The farming community, it is said, is especially up in arms over the recent disregard of the law there.

New Pennsylvania Road—Bids are being taken by State Highway Commissioner Joseph W. Hunter of Pennsylvania for a new macadam state road that will give motorists a new route into Pittsburg from the east and will eliminate a wretched stretch of road on the present Philadelphia-Pittsburg pike. The proposed line will be from Irwin, Pa., on the main line of the Pennsylvania railroad, west 5 miles to Circleville, where it will connect with the new Allegheny county macadamized road near McKeesport, Pa.

Badges for Demonstrators—A new feature of interest in connection with the Grand Central palace show is a special badge for each demonstrator. It may be used for the purpose of identifying persons taken out for demonstrations and no other. When a demonstrator leaves the building with a party he will surrender his badge to the officer in charge of the demonstrator's entrance and will receive in return a ticket for the number of persons in his party, including himself, available for admission at any time within two hours. On his return and delivery of the ticket the badge will be returned to him. This badge is good for admission only between 10:30 a. m. and 6 p. m.

Winton Offers Prizes—The Winton Motor Carriage Co. announces it intends to offer $2,500 in prizes for chauffeurs on Winton six-cylinder cars who do the best work and show the most common sense in 1908. The first prize will be $1,000. That the records may be absolutely accurate in detail, each contestant will be required to have his report acknowledged by his employer and sworn to before a notary public. When the contest closes, a committee composed of motor editors of leading daily papers will be asked to make the awards. Mr. Winton emphasizes the point that this contest operates to the distinct advantage of the car owner, as follows: Each competing chauffeur must drive for the same owner throughout the contest, hence the man who stands to win $1,000 is certain to give his employer the most faithful service and will hesitate before he jumps his job in midseason. The award is based on average cost of repairs per mile, hence the chauffeur will endeavor to avoid repair bills and will do his best to give his employer maximum mileage at minimum expense. In order to avoid repair bills, the driver will exert himself to handle the car intelligently, to understand its care and repair so that he can keep it in constantly good running condition and especially to avoid reckless driving, which, more than any other single item, helps to keep repair shops busy.

Buffalo Dealers on Outing—The members of the Buffalo Automobile Trade Association recently had an enjoyable outing. They boarded the steamer George Dittly and visited various pleasure resorts along Niagara river. An elaborate lunch was prepared by the commissary department.

Parade the Feature—The Automobile Club of Buffalo has requested members to take part in the decorated and illuminated motor car parade on Tuesday evening, September 3. This parade will be one of the big features of Buffalo's home week celebration. Twenty-three silver trophies will be awarded to the best decorated or illuminated cars in the parade. Bunting, flags, Japanese parasols, Japanese lights, flowers and electric lights will be used in the decorations.

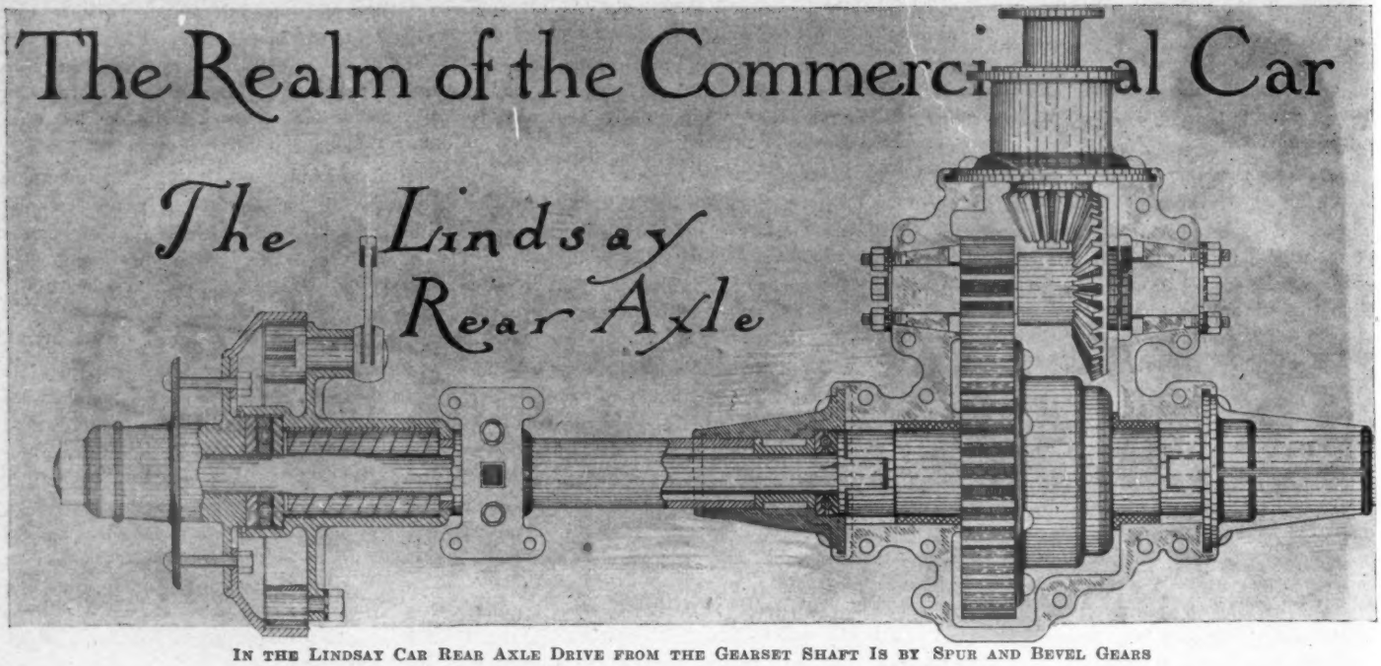
Ohio Reliability—The reliability run for the Ohio Sun cup covered 319 miles through the western half of Ohio and lasted 2 days. Five cars made perfect scores—the Pope-Hartford, Thomas Flyer, two Buicks and an Oldsmobile. The record of the other cars for the 2 days was as follows: One Reo, 4 points; Dr. Samuel's Logan, 6; Autocar, 6; Stoddard-Dayton, 10; one White steamer, 16; Gramm's Logan, 60; Premier, 60; six-cylinder Ford, 76; Cadillac, 77; Buckeye Flyer, 92.

Buffalo Streets Improved—On account of the efforts of the good roads committee of the Automobile Club of Buffalo the poor pavements in Main and other streets in that city have been greatly improved. The principal country roads outside of Buffalo have also been given attention, so far as the laying of dust and other features is concerned. John M. Satterfield is chairman of the committee. The club is also trying to bring about the punishment of those who throw glass on the streets and roads traversed by motorists.

Coast Continues Its Activity—The good roads work in the state of Washington continues vigorously and in every section there is evidence of the greatest interest in the improvement of the highways. The new state aid law is being taken advantage of in the various counties. At a recent meeting of the county commissioners of Chehalis county contracts were let for the graveling of 15 miles of road in different parts of the county and for the building of a bridge over the Humptulip river. The commissioners also passed a resolution asking the state highway board to appropriate $10,000, or as much as might be available, for the road between Montesano and Aberdeen. The Hanford Irrigation Co. is back of a movement to construct a first-class motor and driving road between North Yakima and Priest Rapids. The distance is about 40 miles.

The Realm of the Commercial Car

The Lindsay Rear Axle



In the Lindsay Car Rear Axle Drive from the Gearset Shaft Is by Spur and Bevel Gears

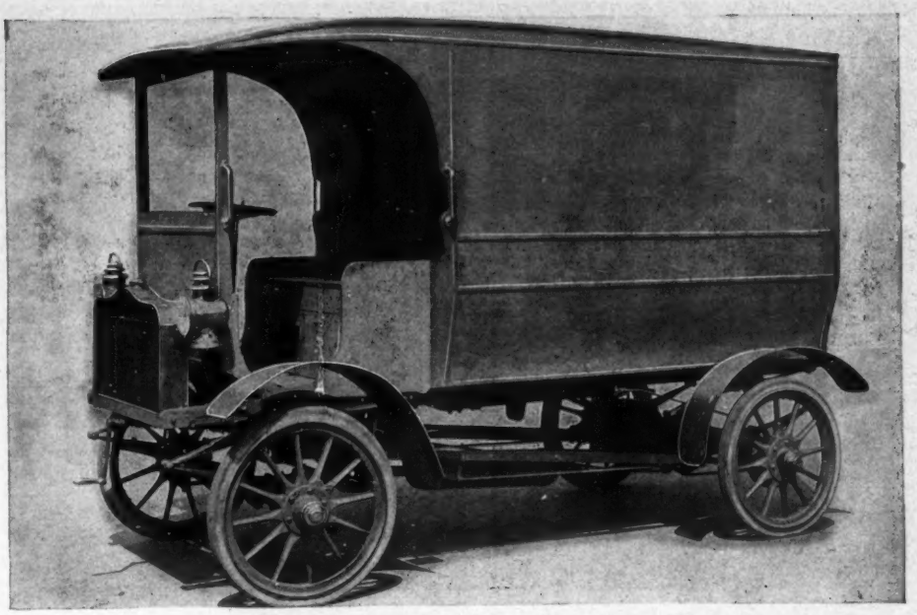
LIGHT shaft-driven delivery wagon with many interesting details of design has been brought out by the T. J. Lindsay Co., Indianapolis, Ind., but it does not yet appear in what quantities the car will be marketed for the coming season. The Lindsay car is not conspicuous because of its motor or because of any unique body lines, but because of its carrying the motor and gearset on the subframe, which is rigid with the rear axle housing and hinges at its forward end onto the framework which carries the body part. In this respect the design is not unlike that used in Marmon touring cars, but differs in that the Marmon cars use a double three-point suspension, whereas the Lindsay delivery has four-point suspension. The side view of the car shows the sloping side member of the subframe on the left, rising, as shown in the illustration, from the front bottom of the back fender and hinging to the side member of the body frame behind the top of the 12 o'clock spoke of the front wheel. The 22-horsepower two-cylinder opposed water-cooled motor is carried transversely on the front end of the subframe and connects by a drive shaft with a two-speed planetary gearset carried in a housing in front of the rear axle. The drive shaft is without universal joints, the front having a flanged end that bolts to the face of the flywheel. The rear end is attached to the transmission by a sleeve and square ends which form a bearing for the rear end of the shaft.

T. J. Lindsay, the designer, has a patented spur drive rear axle which is claimed to be specially suitable for light commercial wagons. The make-up of it appears in two illustrations, one on the top of this page and the other at the bottom of the next one. Looking at the latter it is seen that the rear end of the drive shaft A flanges onto the shaft B for coupling with the planetary gearset C. The shaft emerging from the gearset carries on its rear end a bevel pinion D, which meshes with a corresponding bevel pinion D1 on a short tranverse shaft E. On this shaft E is a spur pinion in mesh with a large spur gear F on the differential, it being through this spur-and-pinion combination that the power is transferred to the back axle. Readers may ask why Mr. Lindsay has introduced the short cross shaft E and uses four gears, two bevels and two spurs, to take the power from the planetary gearset to the back axle. The designer says: "The compensating or differential gear—a complete floating gearing—has no end thrust from the gears or wheels of the vehicle; the differential gearing can be withdrawn without disturbing the axle shaft sections G; every gear in the axle system is adjustable; the shafts G of the rear axle carry the load and receive the end thrust, having provided for this purpose ball end thrust bearings N; the bevel and spur combination makes it possible to equalize the size of the gears and eliminate side thrust and wear of the bearings; using bevels and spurs lessens the speed, saves power and also lessens the diameters of the gears, giving a greater road clearance." This is the manufacturer's story. The short cross shaft E has behind its bevel a race of ball thrust bearings M, and between it and the differential there cannot be end thrust because of transmitting between them by spur gears.

The planetary gearset C is incased in a tubular extension Z of the rear axle housing, this tubular extension finding support on the subframe pieces, which converge from the ends of the rear axle casing to the forward end of the transmission, where an inserted cross piece supports the

Franklin's Air-Cooled Light Delivery Truck

gearset and forms its front bearing. The outer ends of the rear axle drive shafts revolve on Hyatt rollers and spring seatings for the back springs are loose on the axle casing. The drive shaft is inclosed throughout its length in a tubing which aids in supporting the forward end of the gearset casing and in turn supporting this drive shaft tubing is a truss rod beneath and paralleling it. The whole construction is made rigid by this arrangement. In other respects the truck is conventional. It has 92-inch wheelbase, wheels with 34-inch diameter and carries 3½-inch tires. The carrying space is 7 feet long and 4 feet wide. Front and rear springs are full elliptics, brakes are on the rear wheels, and controls are located very conveniently.



THE LINDSAY, WITH MOTOR AND GEARSET CARRIED ON SUBFRAME

BIG FIELD IN BRITISH TRIALS

The long talked of commercial vehicle tests in England have now reached a point from which they can be considered on their merits. Fifty-eight vehicles have been entered. These are divided into classes depending on the net load carried.

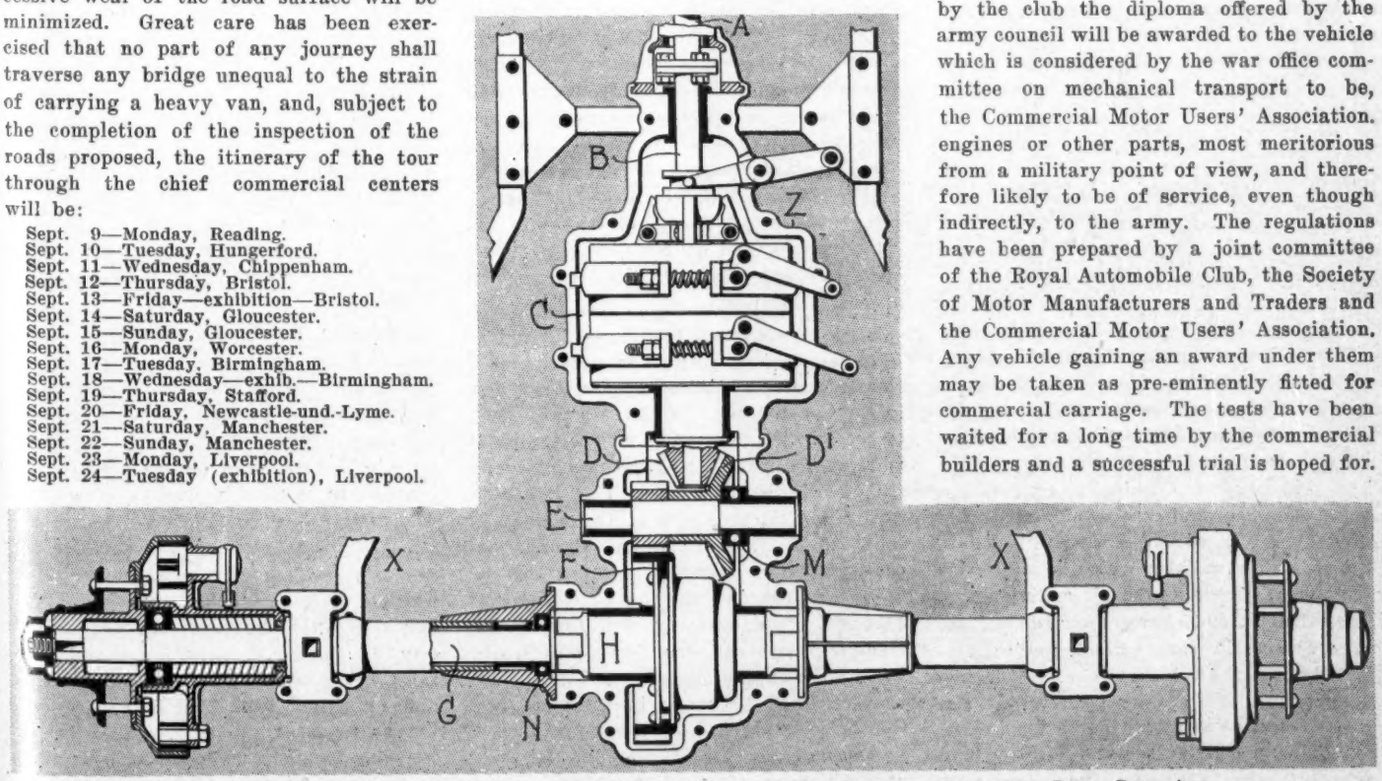
Class	Vehicle carrying net loads of	Approximate mileage per day
A	18 cwt.	70 miles
B	20 cwt.	60 miles
C	30 cwt.	55 miles
D	40 cwt.	50 miles
E	60 cwt.	40 miles
F	100 cwt.	30 miles
G	120 cwt.	30 miles

In additio nthere is a class, H, for tractors, carrying 120 hundredweight including trailers, which are to cover 30 miles a day.

The start and destination of each day's run will be the same for all, but the different classes will take different routes to make up the respective mileage for each, and so any possible danger of excessive wear of the road surface will be minimized. Great care has been exercised that no part of any journey shall traverse any bridge unequal to the strain of carrying a heavy van, and, subject to the completion of the inspection of the roads proposed, the itinerary of the tour through the chief commercial centers will be:

Sept. 9—Monday, Reading.
Sept. 10—Tuesday, Hungerford.
Sept. 11—Wednesday, Chippenham.
Sept. 12—Thursday, Bristol.
Sept. 13—Friday—exhibition—Bristol.
Sept. 14—Saturday, Gloucester.
Sept. 15—Sunday, Gloucester.
Sept. 16—Monday, Worcester.
Sept. 17—Tuesday, Birmingham.
Sept. 18—Wednesday—exhib.—Birmingham.
Sept. 19—Thursday, Stafford.
Sept. 20—Friday, Newcastle-und.-Lyme.
Sept. 21—Saturday, Manchester.
Sept. 22—Sunday, Manchester.
Sept. 23—Monday, Liverpool.
Sept. 24—Tuesday (exhibition), Liverpool.
Sept. 25—Wednesday, Manchester.
Sept. 26—Thursday—exhib.—Manchester.
Sept. 27—Friday, Huddersfield.
Sept. 28—Saturday, Leeds.
Sept. 29—Sunday, Leeds.
Sept. 30—Monday—exhibition—Leeds.
Oct. 1—Tuesday, Sheffield.
Oct. 2—Wednesday—exhibition—Sheffield.
Oct. 3—Thursday, Mansfield.
Oct. 4—Friday, Nottingham.
Oct. 5—Saturday—exhibition—Nottingham.
Oct. 6—Sunday, Nottingham.
Oct. 7—Monday, Leicester.
Oct. 8—Tuesday, Northampton.
Oct. 9—Wednesday, Bedford.
Oct. 10—Thursday—exhibition—Bedford.
Oct. 11—Friday, Biggleswade.
Oct. 12—Saturday, London.

The object of the trials is to demonstrate the advantages of mechanical over horse haulage for the transport of freight, and to show the great progress which has been made in the construction of commercial motor vehicles, particularly in matter of efficiency, economy of working and reliability. The awards will be determined by the judges and the performance of the vehicle in regard to accessibility, adequacy of platform area and convenience for loading, adhesion—loaded and light—brakes, condition after trial, cost of carriage per net ton mile—including cost of fuel, lubricants, etc.—cleanliness of vehicle in service and absence of oil and grease leakages, ease of manipulation, finish and workmanship, freedom from nuisance to public, as smoke; general appearance, hill-climbing, maneuvering, quiet running, repairs and replacements, springing, steering gear. In addition to the medals, diplomas and certificates given by the club the diploma offered by the army council will be awarded to the vehicle which is considered by the war office committee on mechanical transport to be, the Commercial Motor Users' Association. engines or other parts, most meritorious from a military point of view, and therefore likely to be of service, even though indirectly, to the army. The regulations have been prepared by a joint committee of the Royal Automobile Club, the Society of Motor Manufacturers and Traders and the Commercial Motor Users' Association. Any vehicle gaining an award under them may be taken as pre-eminently fitted for commercial carriage. The tests have been waited for a long time by the commercial builders and a successful trial is hoped for.



A TWO-SPEED PLANETARY GEARSET CONNECTED UP WITH THE LINDSAY SPUR AND BEVEL-GEAR DRIVE REAR AXLE

NEW WATER-COOLED MODEL BEING MADE BY THE CORBIN COMPANY

Corbin Recruit — George A. Crittenden, formerly in business in Detroit and later with a tire company, has become identified with the Boston agency of the Corbin car.

French Sells Out—L. E. French, head of the Girard Motor Car Co., which handles the Cleveland cars in Philadelphia, has disposed of his interests to George Ruhland of that city.

Addition to Springs Plant—Increased demand for motor car springs has caused the Hess-Pontiac Spring and Axle Works of Pontiac, Mich., to contract for the erection of a one-story addition to its plant. The addition will be 60 feet square and enough machinery will be added to increase the force of employes by 100 men.

New Concern in Flint — The Michigan Motor Castings Co. has been organized to do business in Flint, Mich., as a branch of the Detroit Stoker and Foundry Co. and plans are being prepared for a white sandstone brick building to be 75 by 300 feet in ground dimensions. It is expected that the new plant will be ready for occupancy by January 1, 1908. The new company will make a specialty of castings for motor cars and will commence operations with from 75 to 100 hands.

Water-Cooled Corbin—The Corbin Motor Vehicle Corporation, New Britain, Conn., will manufacture water-cooled cars for 1908; in fact the first models of this type have been on the roads for a long time. The water-cooled Corbin in general appearance is a duplicate of its air-cooled predecessors except for a water-filling funnel above the radiator which is made with the same contour as the air-cooling front. The rating of 30-35-horsepower comes from four separately cast cylinders with 4½-inch bore and 4¼-inch stroke, each measurement ¼ inch greater than in the air-cooled cars. Valves are carried on opposite sides, a cellular radiator is fitted and a gear pump provokes the circulation. From the motor back the car is a duplicate of the 1907 machine, having a 108-inch wheelbase and five-passenger body.

Autocar Sells Branch—The Autocar company's new Philadelphia branch house has been sold to the General Motor Car Co., which will hereafter represent the Autocar in the Quaker City. The announced reason for this move is that the Autocar company desires to concentrate its energies on manufacturing and general distribution. W. P. Herbert is the manager of the General Motor Car Co. Associated with him are W. B. Nicholson, Jr., and W. C. MacBride.

Premier Branch in Boston—The Premier company has decided to open a branch house in Boston. For the past few years these cars have been handled in the Hub by George C. Squier. He has had much success with them, but the factory people thought they could do well if they had their own branch house and so last week they sent H. L. Johnson to Boston to take charge. Mr. Johnson is well known in Boston, having formerly resided in Brookline. He was with the G & J Tire Co. The company will have a new garage and office building erected for its occupancy in a central location.

Brush Locates in Pontiac — Through a deal which has just been consummated Pontiac, Mich., is assured of a large new motor car factory. E. M. Murphy, head of the Pontiac Buggy Co., will be president and general manager of the new company and associated with him will be Frank E. Kirby and A. P. Brush of Detroit, R. F. Monroe, M. J. Hallinan and G. J. Cram of Pontiac and James Dempsey of Manistee. The concern will be capitalized at $300,000. The company will turn out a medium-priced car, the feature of which will be the engine, designed by Mr. Brush. The car will be made in runabout and touring car designs. The company will begin business at once in the plant of the Crescent Carriage Co., but additional space will be secured before January 1, 1908. Several cars are now in course of construction and samples will be out in time for next winter's shows.

Part of Pierce Equipment — It is announced that for the fourth consecutive year 1908 will see every Pierce Great Arrow car equipped with Truffault-Hartford shock absorbers.

Publicity Man for Stearns—Henry H. Hower, managing editor of Motor Vehicle and formerly motor editor of the Cleveland Plain Dealer, has resigned his position to take charge of the publicity department of the F. B. Stearns Co. of Cleveland, maker of the Stearns.

After More Room — Despite the completion of the recent addition to its big plant, the Billings & Spencer Co. of Hartford, Conn., finds it necessary to further augment its facilities and has accordingly started work on a new building. The company makes motor car forgings and a short time ago opened a plant in Canada, the only one of the sort in that country.

Shurmer Will Not Resign—In announcing the increase of capital stock of the Royal Motor Car Co. to $1,000,000 the statement published in the daily papers to the effect that E. D. Shumer had given up the presidency of the company is denied. Mr. Shurmer will retain that office for at least another year with the assistance of a larger executive committee. The company is now working on parts for 50 cars for 1908 to include the present models with refinements and also new models not yet announced in detail.

Newcastle Plant Running.—At Newcastle, Ind., at 8:55 a. m. on August 13 the wheels of the new factory of the Maxwell-Briscoe Motor Co. began to turn. It was only 3 short months ago that Vice-President C. W. Fairbanks officiated at laying the cornerstone of this plant, but during this time the building has been equipped and finished. As far back as last March J. D. Maxwell prophesied that the plant would be turning out motor cars by the time snow flies. Now, however, the plant is in actual operation, and the promise made by Mr. Maxwell has been more than fulfilled.

Apperson Policy Changed—The Apperson company has changed its policy and has decided to close all its branch houses and market its product through regularly appointed Apperson dealers. In accordance with this Sales Manager Strout has placed the Apperson line in New York with the Sidney B. Bowman Automobile Co., 225 West Forty-ninth street, and will close the Gotham branch September 1. The Chicago branch will be discontinued October 1 and the Apperson handled in that city by Joseph F. Gunther, president of the Chicago Automobile Trade Association and for years with Thomas B. Jeffery & Co. as manager of the Chicago Rambler branch. Two new models have been added to the Apperson line, which will consist of

a 50-55-horsepower touring car, a 30-35-horsepower four-passenger roadster with a double ignition system and the 50-55-horsepower Apperson Jackrabbit.

Severance Promoted—H. C. Severance, formerly with the Hartford office of the Hartford Rubber Works Co., has been appointed manager of the Detroit branch of that concern. Severance has been connected with the Hartford Rubber Works Co. since his boyhood.

Conant Changes—Announcement is made of the change in business of W. H. Conant, formerly manager of the vehicle battery department of the Gould Storage Battery Co. Mr. Conant leaves the Gould company to accept the position of general manager of the Pittsburg Motor Vehicle Co. This company has its plant and main offices in Pittsburg and has been manufacturing for some years past a type of commercial electric vehicle. Mr. Conant opens the New York offices of the company.

May Beat City—The suit against the Boston agency of the Locomobile company to oust it from the new garage it has erected on Newbury street bids fair to be decided in the company's favor, it is said. Applications for both temporary and permanent injunctions to prevent the company from using the building have been denied by the court within a week and it looks now as if the new home of the Locomobiles will be allowed to be used for business purposes without any further trouble. The case has been dragging along in the courts for a year.

Strength of the Independents—By the addition of the Pennsylvania Auto-Motor Co. of Bryn Mawr, Pa., maker of the Pennsylvania car, the membership of the American Motor Car Manufacturers' Association is increased to forty-six. These forty-six members will participate in the drawing at the New York headquarters next Saturday, when the allotment of space will be made in connection with the Grand Central palace show to be held in New York, October 24 to 31. The association members this year will have about 26,000 square feet, which is a 50 per cent increase over its last year's space.

New Prest-o-Lite Plant—Since the fire that destroyed its Indianapolis plant last week, the Prest-o-Lite Co. officials have been busy discussing plans for rebuilding. It is said to be unlikely that the destroyed plant will be rebuilt. The company had been considering new factory plans even before the old one was destroyed, although nothing had been said in public about them. Among the sites under consideration is one on East South street near St. Vincent's hospital, but the fire chief has raised objection to a plant of this kind being located so close to the hospital. Carl G. Fisher, president of the company, believes the recent fire was caused by the bursting of a pipe during a high pressure of gas. He says that in the factory contemplated there will be such improvements that danger of a repetition of the recent fire will be impossible. The tanks that have been filled in Indianapolis will be cared for at Joliet, Ill., until the new factory is completed.

Will Open Winton Branch—On September 1 the Winton company will open its branch house on Van Ness avenue, San Francisco. The new house will be under the management of Charles M. Brown, formerly manager of the Chicago establishment. He will be assisted by H. L. Ownesey.

Change of Name—Charles A. Singer and Henry W. Palmer announce that on and after September 5 the Matheson Co. of New York will be known as the Palmer & Singer Mfg. Co., the change having been authorized by an order of the supreme court of Kings county, New York, filed with the clerk of Suffolk county, July 25.

Luthy Going on the Road—G. G. Luthy, secretary of the Bartholomew Co., maker of the Glide, leaves Peoria September 2 for a complete tour of the west in the interest of Glide cars. He will visit Kansas City, St. Joseph, Wichita, Denver, Salt Lake City, Spokane, Seattle, Tacoma, Portland, San Francisco, Los Angeles and Texas points.

Maxim's Plans—Hartford's motor car industry will soon be augmented by H. P. Maxim, former chief engineer of the Electric Vehicle Co., who resigned to enter business for himself. Mr. Maxim is somewhat reticent about the new venture and says nothing other than that electrics will be built. Mr. Maxim is retained by the Electric Vehicle Co. as consulting engineer and represents that organization in the mechanical branch meetings of the A. L. A. M. Mr. Maxim has ben taking a much-needed rest previous to his going into business and has just returned from a motor trip which included the entire coast line of the New England states, returning by way of the Hoosac mountain route and through the Berkshires. Mr. Maxim will now set to work on his new schemes, but he will not divulge his secret just now.

Winton's Show Plans—Following the plan adopted winter before last the Winton Motor Carriage Co. will display its 1908 model throughout the country by means of special railway cars which will visit forty-four of the leading American cities and travel from coast to coast. There will be two cars, one going east and the other west. There will be two demonstrating models in each car, an enameled chassis, a fully equipped exhibition model and a corps of demonstrators. Upon arrival at each city the exhibit will be taken to the company's salesroom and there displayed from 1 to 4 days. The western itinerary is as follows: Toledo, Detroit, Cincinnati, Louisville, Indianapolis, St. Louis, Chicago, Milwaukee, St. Paul, Minneapolis, Omaha, Lincoln, Denver, Salt Lake City, Los Angeles, San Jose, San Francisco, Portland, Tacoma, Seattle, Vancouver, Winnipeg. The eastern itinerary includes: Pittsburg, Washington, Baltimore, Philadelphia, Newark, Newburg, N. Y., New York city, Brooklyn, Bridgeport, Boston, Taunton, Providence, Middletown, Conn., Hartford, Springfield, Troy, Albany, Syracuse, Rochester, Buffalo and Toronto.

Speedway Garage Opened—The Speedway garage has been opened at 414 West One Hundred and Fifty-fifth street, New York city, occupying a building that formerly was used to house famous horses.

Fire in Pittsburg—More than $200,000 worth of property was destroyed in the blaze last week that threatened the entire row in the east end of Pittsburg. The East Liberty Co. was put out of commission but will be in line again soon with 1908 machines. The American Automobile Co. had its new garage damaged considerably and the Central Automobile Co. got off luckily because of being protected by heavy buildings on both sides. The Jackson Automobile Co. had damages estimated at $1,000. The most encouraging feature about the fire was that although it destroyed several buildings not a tank of gasoline was damaged or exploded. It was shown that the levels in the tanks were the same after the fire as before.

Praise for Diamond Company—Akron, O., noted more for its rubber products than any other one thing, is this year celebrating the one hundredth anniversary of the founding of the city. Among the town's leading industries mentioned in a centennial edition of one of Akron's dailies is the Diamond Rubber Co., whose remarkable growth in the past 9 years is credited with having been a chief factor in advancing the population of the city from 42,000 to 60,000. The growth in the motor tire and other departments of the Diamond factories has increased the number of employes from 250 9 years ago to 2,750 today, and the ground area occupied from 6 to 24 acres. The capitalization of the company has increased from $50,000 to $5,000,000, it is announced.

Firestone Election—At the Firestone Tire and Rubber Co.'s annual meeting in Akron the financial statement read is said to have been by far the most favorable in the company's history. Not the least gratifying item was an increase of more than 60 per cent in total sales over the preceding year. The entire board of directors was re-elected and the following officers chosen: H. S. Firestone, president and general manager; Will Christy, vice-president; S. G. Carkhuff, secretary; L. E. Sisler, treasurer, and Frank R. Talbott, assistant treasurer, the last-named office having ben created at this meeting. Plans were submitted at the meeting for still another addition to the plant which will increase the capacity 40 per cent to 50 per cent over what it will be when the extension now under construction is completed.

BRIEF BUSINESS ANNOUNCEMENTS

Lansing, Mich.—Work is rapidly proceeding on the new building for the Auto Body Co.

Wilson, N. Y.—A motor bus line has been established between this town and Olcott Beach.

Cleveland, O.—The Royal Motor Car Co. has increased its capital stock from $500,000 to $1,000,000.

Trenton, N. J.—The Pine Brook Auto State Co. has been incorporated with a capital stock of $25,000.

Buffalo, N. Y.—The Co-operative Automobile Co. has been incorporated with a capital stock of $20,000.

Bath, N. Y.—The Kirkham Motor Works have received an order for 100 motors from the York people.

Cleveland, O.—The French-American Motor Co. has been incorporated with a capital stock of $10,000.

Butler, Pa.—The McIntire-Willets machine shop and motor garage has been burned out with a loss of $20,000.

Pittsburg, Pa.—Reed Knox, son of United States Senator Knox, has joined the forces of the Keystone Automobile Co. as salesman.

Albany, N. Y.—The Wellington garage, of Manhattan, has been incorporated with a capital stock of $5,000 and will conduct a garage.

Flint, Mich.—Endeavors are being made to establish a motor car line between this city and Felton. It is the intention to make five trips a day.

Trenton, N. J.—A new garage is in course of erection on Canal street for John Brock, and will be ready for occupancy in a short time.

Portsmouth, O.—William Friel has opened negotiations for the lease of the ground floor of the old Court street police station and will open a garage there.

Albion, O.—The Buckeye Rubber Co. is about to erect an addition to its plant, the new building to be devoted exclusively to the manufacture of pneumatic tires.

Detroit, Mich.—The Gemmer Engine Co., formerly of Wabash, Ind., has secured the old factory building of the Art Novelty Co. and will remove to this city. The company has been reorganized under the name of the Gemmer Mfg. Co. and has a capital stock of $100,000.

Columbus, O.—A new company, to be known as the R. O. Williams Co., has filed articles of incorporation with a capital stock of $50,000. Roy O. Williams is to be president and general manager. The new concern has taken over the building formerly occupied by the Broad Oak garage on East Broad street.

Nazareth, Pa.—A garage and carriage works will be built here at a cost of $30,000.

Boston, Mass.—The Back Bay Automobile Co., with a garage at 169-173 Huntington avenue, has filed a petition in bankruptcy.

Columbia, S. C.—The Darlington Automobile Co., which was recently organized, is erecting a new building on Exchange street.

Pittsburg, Pa.—J. H. Schram has been awarded the contract for the erection of a new garage at Second street and Delafield avenue, Aspinwall.

Boston, Mass.—The Commonwealth garage, at the corner of Malvern street and Brighton avenue, has been burned out. Cars valued at $35,000 were destroyed.

Trenton, N. J.—The patent granted to Elmer S. Smith, of Bound Brook, for an internal combustion engine has been assigned to the Devac Auto Co., of East Orange.

Providence, R. I.—The factory of the American Locomotive Co., maker of the Berliet car, has been greatly enlarged and improved. More than $100,000 worth of machinery has been installed.

New Haven, Conn.—C. S. Johnston, who recently severed his connection with the University garage on St. John street, has been appointed treasurer, general manager and designer of the Continental Automobile Co., also of this city. Herbert Moeller has taken over the University garage and will continue the business at the old stand of his predecessors.

Hartford, Conn.—Ernest R. Waterman has been appointed sales manager of the Hartford Suspension Co.

Boston, Mass.—The Holmes Motor Vehicle Co. has filed a petition in bankruptcy.

Philadelphia, Pa.—The Gorson Automobile Exchange, of 617-619 Arch street, has been greatly enlarged and improved.

Sanderson, Tex.—W. W. Pitts, formerly of Mexico City, is about to start a motor line between this town and Pecos. He will also have a shop and garage in the latter city.

Canton, O.—Edward Goodwin has sold his garage and business to the Auto Transit and Repair Co. It will enlarge the building and act as agent for the Ford and Jackson cars.

Minneapolis, Minn.—A new garage is to be built for the Packard Motor Car Co. It will be located on Eighth street, near the home of the Minneapolis Automobile Club.

New York City—One of the features of the new store of the Greenhut Co., which will occupy the old quarters of the B. Altman Co. on Sixth avenue, is to be a garage. The store is to open on September 17, it is announced.

New York City—Plans have been filed for a two-story brick garage to be built on the south side of One Hundred and First street, near Broadway. The building will be occupied by the Unexcelled Garage Co.

Memphis, Tenn.—The Memphis Automobile Co. has bought the building on Madison avenue formerly occupied by the undertaking firm of Taylor & Norris, and after alterations have been completed will use it as a garage.

Jackson, Mich.—A new concern will shortly start in business here under the name of the Steel Swallow Co., which has a capital stock of $150,000. It will make a specialty of runabouts, as well as manufacturing delivery rigs.

Portland, Me.—The Stranahan-Eldridge Co., of Boston, has opened a branch at 42 Preble street for the sale of the Buick. The branch will be under the management of A. L. Turner, who has been in charge of the sales department in Boston.

South Tacoma, Wash.—Peter Leonard has rented the new building recently erected at South Fifty-fourth and Washington streets, and will occupy it as a motor car repairing shop. Eventually he will have a livery business in connection with the repair shop.

RECENT INCORPORATIONS

Muncie, Ind.—Rider-Lewis Motor Car Co.; capital stock, $150,000; to manufacture a six-cylinder motor car from the design of R. C. Lewis. W. A. Rider, of Indianapolis, is the president of the concern.

New York—Twombly Goggle Co.; capital stock, $100,000; to manufacture goggles.

Washington, D. C.—Auto Sales & Garage Co.; capital stock, $15,000; to do a general garage business.

Washington, D. C.—International Auto and Sightseeing Transit Co.; capital stock, $100,000; to conduct an automobile sightseeing company. C. F. Briggs, of this city, is the president, H. I. Quinn, secretary and treasurer, and W. P. Barnhart, general manager.

Springfield, Ill.—Mentor Sightseeing Auto Co.; capital stock, $50,000; to engage in the manufacture and operation of motor vehicles. Incorporators, H. C. Fuhup, D. B. Mason and W. S. Bowker.

Cincinnati, O.—Auto Livery and Repair Co.; capital stock, $10,000. Incorporators, C. E. Patton, W. C. Meyer and Arthur Anson.

Weehawken, N. J.—Garage and Supply Co.; capital stock, $2,000; to deal in motor cars.

New York—Allen-Kingston Motor Car Co.; capital stock, $300,000. Incorporators, Edward R. Thomas, W. G. Allen and Edward Godfrey, all of New York city.